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Location of Mines and Factors Affecting Exposure

Buc and Associates, Washington, DC

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LOCATION OF MINES AND FACTORS AFFECTING EXPOSURE (DRAFT)

Prepared For

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF SOLID WASTE

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SUMMARY

Buc & Associates, Inc. has prepared this report in support of the Environmental Protection Agency's final regulatory determination for solid waste from the extraction of ores and minerals required by Section 3001(b)(3)(C) of the Resource Conservation and Recovery Act. Under this section of the Act, the Administrator of EPA must determine to promulgate regulations under Subtitle C of RCRA for these wastes or determine that such regulations are unwarranted. In making the determination, the Administrator must consider many factors, among them the risk that mining wastes pose to human health and the environment.

This report provides a qualitative perspective on the risk that mining wastes pose by first reporting the location of mines, the location of potential receptor populations with respect to the mines, and selected characteristics of the environments at mining locations, and then comparing selected parameters which influence exposure opportunities at mining sites with those at Subtitle C sites. Thus, it includes the first steps of an exposure analysis, one of the components of a formal risk assessment. It does not, however, present an integrated or quantified exposure assessment since it does not consider the transport and fate of contaminants through the environment or their subsequent uptake by receptors.

Based on our analysis, the potential for exposure of human populations to constituents of mining wastes from active sites appears fairly limited. First, the mining industry has been in a state of decline and the number of mines has decreased substantially since 1982. While the Report to Congress found 474 active mines 1982, our data show a decrease to 292 active mines in 1984. Second, most mines are in areas of low population density and are not near public drinking water utilities. In particular, data obtained from GEMS show that

average population within 5 kilometers, for the 292 mines studied, was 1279 people. This is far less than the average population of 24,298 reported for Subtitle C land disposal facilities. Similarly, data obtained from FRDS show that only 22 percent of mines had drinking water systems within 5 kilometers, while over 46 percent of Subtitle C facilities had a system within the same distance. Third, mining sites have less potential for exposure than Subtitle C facilities through groundwater contamination. Mining sites are generally located in extremely arid areas. Over 60 percent of all active mines were characterized by a net recharge of 0-2 inches, while only 20 percent of Subtitle C sites have a net recharge of less than 5 inches. Further, mining sites are not as close as Subtitle C sites are to groundwater. Over 38 percent of Subtitle C facilities have a depth to groundwater of 10 feet or less. Only about 20 percent of mining sites had a depth to groundwater of 0-10 feet.

While the potential exposure for human populations appears fairly limited, potential risk to the environment may be greater. Data obtained from the USGS maps show that mines are generally in close proximity to surface water. The average distance to surface water for the 292 active mines is only 1693 feet, which suggests the possibility of risk to aquatic species. This is much closer than the average of 2658 feet reported for Subtitle C land disposal facilities. In addition, data from the Heritage Data Base of the Nature Conservancy show that 83 mines, or 30 percent of the total, have at least one endangered or threatened species present within 5 kilometers. An additional 44 mines have other vulnerable species within a 5 kilometer radius. These vulnerable species, while not rare enough to be classified as endangered or threatened, are being monitored by the Heritage programs in the respective states as elements of special concern. In total, 127 mines, or 46 percent of the 292 mines

have some ecologically vulnerable species or community within 5 kilometers.

Our data collection and analysis reveal another characteristic of mining sites which is important. While the potential for exposure for human population appears limited on average, there is wide variation in the results for individual mines. For example, while GEMS results show an average population of 1279 people within 5 kilometers of the 292 mines, the populations for individual mines ranged from 0 to 20,191 people. There is similar variation in the results from FRDS. While the average population served by water utilities within 5 kilometers of the mine sites was only 2484, the range of population served was 10 to 20,050. Environmental characteristics of the mines also varied from site to site. While the majority of sites were not close to groundwater, 32 percent did have a depth of 30 feet or less. Similarly, although the vast majority of mines had low net recharge (0-2 in), the remaining sites were evenly distributed among the other ranges of recharge. Thus, some sites appear to have much greater exposure potential than other sites.

The rest of this report describes the individual tasks we performed to set a perspective for potential exposure for human populations and the environment. The first section explains how we updated the number and locations of mines. The second section describes the population characteristics of mining sites. The third section presents data on selected environmental characteristics of the mines. The fourth section details our efforts to determine the proximity of the mines to species of special concern. The fifth section presents a multivariate analysis, incorporating data from the first three sections. The sixth section compares selected characteristics at mining sites with those at Subtitle C facilities.

NUMBER AND LOCATION OF MINES

In order to determine the potential for exposure, we needed to know how many mines are presently active and thus have the potential to release constituents of mining waste to the environment from their current waste management practices. We contacted the Division of Minerals Information at the Bureau of Mines (BOM) in Washington, D.C. to compile a list of active mine sites for 1984 in the segments of concern: Metallic Ores, Uranium, Asbestos, and Phosphate.

Commodity specialists at the Bureau of Mines in Washington, D.C. furnished us with a list of active mines in the specified segments for 1984. The Bureau has not yet prepared its final estimate of the number of active mines in 1984 for inclusion in the 1985 Minerals Year Book; the numbers supplied to us, however, represent their current best estimate for 1984.

Once we had the best estimate of the number of mines active in 1984, we needed to pinpoint the locations of the mines so we could determine distances from the mines to human populations. We obtained the locations of mines from the Minerals Availability System (MAS) data base, maintained by the BOM, and used for the systematic storage and rapid retrieval of mineral deposit information. By matching the active mining sites provided by the BOM commodity specialists with the sites on the MAS tape, we were able to compile extensive information on each site including latitude and longitude; primary, secondary, and tertiary commodity; and type of operation. The MAS tape also contains hydrogeologic information such as type of ore body and average depth to mineralization which could be useful in a full-scale risk assessment.

Based on the information from the Bureau of Mines, there were a total of 292 active mines in 1984 in the segments of concern.

Appendix 1 lists the active mines, their location, and other information reported herein. We also attempted to ascertain what percentage of these mines have milling and/or leaching operations. We were not able to obtain exact counts on milling and leaching operations for the universe of 292 mines. We did, however, obtain this information for 47 mines that were sampled for the 1985 Report to Congress, "Wastes from the Extraction and Beneficiation of Metallic Ores, Phosphate Rock, Asbestos, Overburden from Uranium Mining, and Oil Shale". For those 47 mines, 39 had milling operations and 15 had leaching operations. Using the information for these 47 mines and projecting by commodity, we estimate that 200, or 68 percent of the 292 mines, also have associated milling operations. We performed a similar calculation for leaching operations in the Gold, Silver, and Copper segments and estimate that 46, or 43 percent of the 108 Gold, Silver, and Copper mines have leaching operations.

Our estimate of 292 active mines in 1984 represents a 38 percent decrease from the 474 sites that were reported active in 1982 for the Report to Congress. A large portion of this decrease can be attributed to the reduction in Uranium, Gold, Silver, and Tungsten mining in recent years. Active Uranium mines fell from 128 in 1982 to 61 in 1984, the number of active Gold mines decreased from 101 to 53, and the number of Silver mines decreased from 63 to 27 during this period. Tungsten mines also decreased from 23 to 4 during this period. Table 1 provides the number of active mines in 1982 and 1984 for the segments of concern.

Different ores occur in different geological conditions, so most of the mining in each segment is concentrated in a few states. Even though the number of mines has decreased substantially from 1982 to 1984, the patterns of geographic distribution of the various commodities are similar to those detailed in the Report to Congress.

TABLE 1

NUMBER OF ACTIVE MINES
FOR SEGMENTS OF CONCERN IN 1982 AND 1984

Segment	1982	1984
Uranium	128	61
Gold (1)	101	53
Iron	26	31
Phosphate	33	31
Copper	32	28
Silver	63	27
Lead	17	15
Zinc	14	11
Aluminum	8	4
Tungsten	23	4
Asbestos	3	3
Titanium	3	3
Others (2)	21	21
TOTAL	474	292

(1) Excludes Placer Operations

(2) Includes Antimony, Beryllium, Mercury, Molybdenum Nickel, Platinum, Rare-Earth Metals, Vanadium.

Source - U.S. Bureau of Mines
Division of Minerals Information

Gold mining is concentrated in Nevada, Montana, and California which together account for 33 of the 53 Gold mines. Colorado contains 35 of the 62 primary Uranium mines, with New Mexico, Utah, and Wyoming also primary Uranium producers. Iron mining is concentrated in Minnesota, where 18 of the 31 primary Iron mines are located.

Copper mining is concentrated in Arizona, where 22 of the 28 primary active Copper mines were located in 1984. Phosphate mining is located primarily in Florida, accounting for 21 of the 31 primary Phosphate mines. Idaho contains another 8 primary Phosphate mines.

Nevada and Idaho were responsible for 14 of the 27 primary Silver mines. Zinc mining is concentrated in Tennessee which accounts for 6 of the 11 primary Zinc mines. Asbestos mining is restricted to California and Vermont.

Due to the fact that ores are found only in particular geologic conditions, mining is concentrated in a small number of states. Colorado, Nevada, and Arizona alone account for 111, or 38 percent, of the 292 mines. Another three states have more than twenty mines each -- Idaho, Florida, and New Mexico. These six states account for 178, or 61 percent of the total number of mines. An additional five states each have more than 10 mines -- Minnesota, Utah, California, Montana, and Missouri. These eleven states account for 247 active mines, or 85 percent of all mines active in 1984.

Additionally, as was the case for the mines studied in the Report to Congress, the geographic distribution of the 292 mines shows that a large portion of active sites are located in the west, particularly the mountain region. Over 84 percent of the sites were located west of the Mississippi River. Table 2 shows the number of mines by state and primary commodity.

TABLE 2

NUMBER OF MINES BY STATE AND
SELECTED PRIMARY COMMODITY

	URANIUM	GOLD	IRON	PHOSPHATE	COPPER	SILVER	LEAD	MOLYBDENUM	ZINC	ASBESTOS	TOTAL
CO	35	3	0	0	0	3	4	6	1	0	52
NV	0	19	1	0	0	7	0	1	0	0	30
AZ	0	4	0	0	22	2	1	0	0	0	29
ID	0	4	0	7	0	7	2	2	1	0	23
FL	0	0	0	21	0	0	0	0	0	0	23
NM	11	4	0	0	3	2	0	1	0	0	21
MN	0	0	18	0	0	0	0	0	0	0	18
UT	6	2	1	1	1	2	1	0	0	0	15
CA	0	7	1	0	1	0	0	0	0	2	14
MT	0	7	0	1	0	3	1	0	0	0	12
MO	0	0	3	0	0	0	6	0	0	0	10
TN	0	0	0	0	1	0	0	0	6	0	7
WY	6	0	0	0	0	0	0	0	0	0	6
TX	1	0	4	0	0	0	0	0	0	0	5
MI	0	0	3	0	0	0	0	1	0	0	4
AR	0	0	0	0	0	0	0	0	0	0	3
NY	0	0	0	0	0	0	0	0	2	0	3
WA	2	1	0	0	0	0	0	0	0	0	3
SD	0	1	0	0	0	0	0	0	0	0	2
PA	0	0	0	0	0	0	0	1	0	0	2
OR	0	1	0	0	0	0	0	0	0	0	2
IL	0	0	0	0	0	1	0	0	0	0	1
AL	0	0	0	0	0	0	0	0	0	0	1
NJ	0	0	0	0	0	0	0	0	1	0	1
VT	0	0	0	0	0	0	0	0	0	1	1
GA	0	0	0	0	0	0	0	0	0	0	1
KY	0	0	0	0	0	0	0	0	0	0	1
NC	0	0	0	1	0	0	0	0	0	0	1
IA	0	0	0	0	0	0	0	1	0	0	1
TOTAL	61	53	31	31	28	27	15	13	11	3	292

* Totals May Not Add Due To The
Exclusion of Some Commodities From Table

Source - U.S. Bureau of Mines,
Division of Minerals Information

POPULATION CHARACTERISTICS OF MINING SITES

Proximity of Sites to Human Population

The opportunities for human exposure to mining waste constituents depend on the proximity of mining sites to human population. We used the Graphic Exposure Modeling System (GEMS), developed by EPA's Office of Toxic Substances, as one way to determine the population around each of the mining sites.

Using site specific latitude and longitude as input data the GEMS program developed populations in concentric rings centered on the site as output. To obtain the most complete information, we calculated populations for a variety of distances. To determine the population with the most potential for exposure, we checked population within 1 kilometer at each site; we also performed searches for distances of 5, 10, and 15 kilometers around the mines.

Before presenting the results of the GEMS runs, we note a limitation of the GEMS methodology which may be relevant in sparsely populated areas. GEMS has two separate procedures for assigning population. In cities, populations are aggregated into block groups. For less heavily populated areas, GEMS uses enumeration districts. On average, an enumeration district contains about 800 people, although the range is generally 200-2000 people. The land area in an enumeration district also varies, from tens of square miles to possibly one hundred square miles or more.

GEMS assumes that all the population in a block group or enumeration district is located at a point in the center of the group or district. Since block groups are so small this assumption works well in urban or heavily populated areas. In large, sparsely populated areas, however, population could be

quite far from the center of the district. Any conclusions we draw pertaining to the population around mining sites are constrained by this assumption.

As a check on the GEMS results, and to attempt to pinpoint the location of populations within the concentric rings, we also derived data on distance to population from the USGS 7 and 1/2 minute maps. As described below, the results from these quadrangle maps are generally consistent with the GEMS output although the GEMS methodology may have lead to a slight understatement of the number of mines with human population within 5 kilometers.

The GEMS results show that most mines (92 percent) did not have any population within a one kilometer radius. Average population within 1 kilometer was 80 people with a range of 0-4370. When we increased the distance of our search to 5 kilometers, we found that only 135, or 46 percent, of the 292 mines had population within 5 kilometers of the mine site. There was, however, a large amount of variation among mines in population within 5 kilometers, ranging from 0 to 20,191 people, with an average of 1279. Population within 5 kilometers for the active mines was for the most part small. Over 82 percent of the sites had populations of under 2000 people, 75 percent had populations under 1000 people, and 59 percent had populations under 100 people.

As expected, the percentage of sites with population, as well as the average population, increased when we expanded the search distance to 10 kilometers. Seventy-five percent of the mines had some population within 10 kilometers. Average population was 4405, with populations ranging from 0 to 69,687. Over half of the mines, 63 percent, still had populations under 2000 people at this distance.

Over 90 percent of the mines had some population within 15 kilometers. Population averaged 9385 people with a range of 0 to 175,207 people. Over 50 percent of the 292 mines still had a population of under 2000 people at this distance. About 12 percent of the mines, however, had populations of 25,000 people or more within 15 kilometers, reflecting the diversity between sites.

The results also indicate that the limitations of the GEMS program in sparsely populated areas may not have been a factor. Population density remained fairly constant within the various distances searched, with a range of 40-50 people per square kilometer for the 5, 10, and 15 kilometers searches. Table 3 shows the number and percentage of the 292 sites having populations greater than 2000, 10,000, and 25,000 people within specified distances.

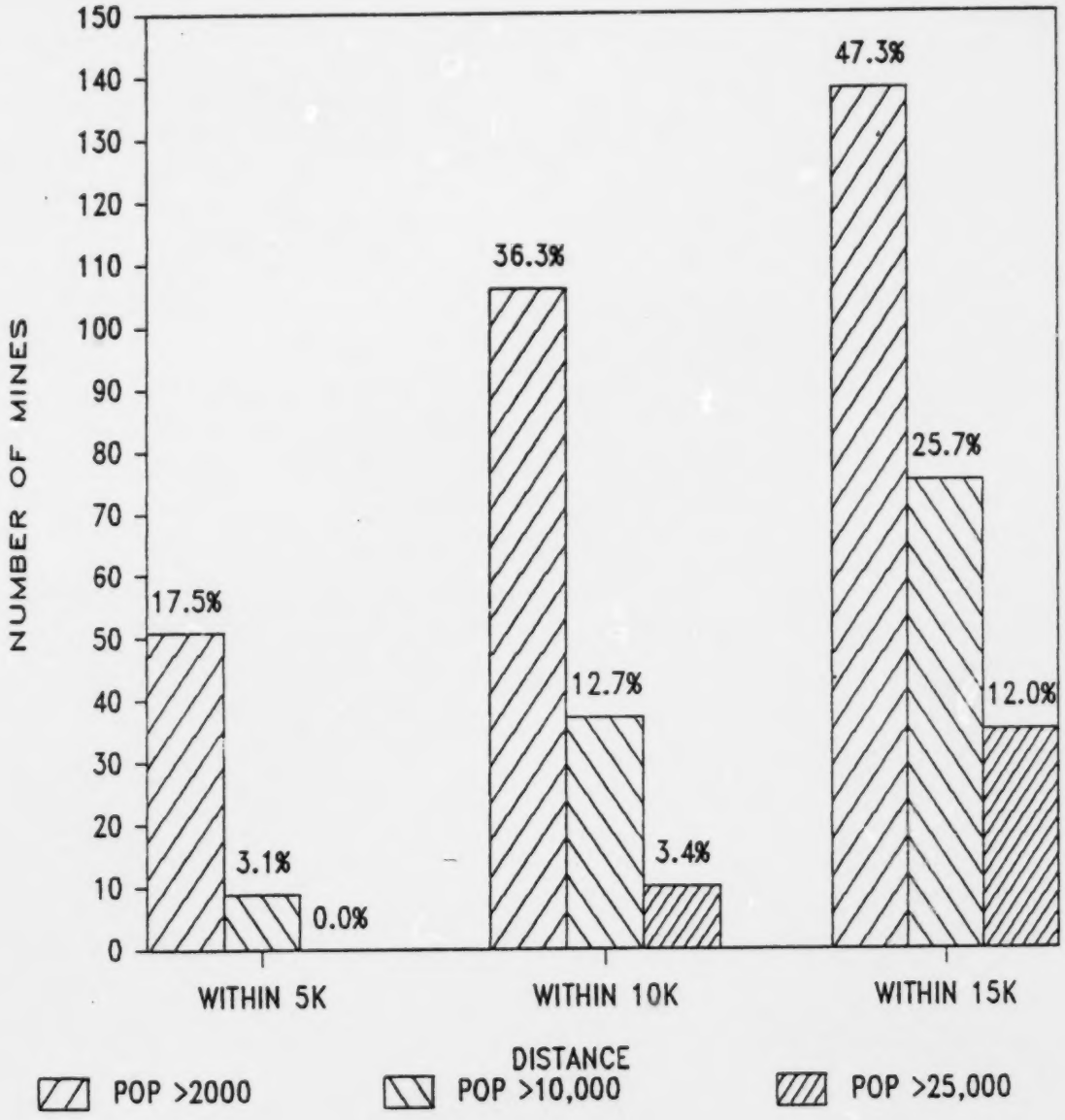
Population by state and primary commodity from the GEMS data reflect the relative geographic isolation of a large number of the 292 mines. Average population within 5 kilometers varied widely across states, ranging from over 10,000 people to no population at all. The highest average populations are in New Jersey (10,143), Pennsylvania (6557), Kentucky (6303), and Minnesota (5217). The states with the lowest average population within 5 kilometers include Oregon and North Carolina, which had no population, Nevada (6), Montana (47), Utah (58), and Georgia (89).

Average population for different primary commodities also vary substantially. The primary commodities with the highest average population within 5 kilometers are Iron (3397) and Zinc (3389). The lowest average populations reported by GEMS are for Uranium (135) and Asbestos (204).

Population by state and primary commodity display even wider

TABLE 3

POPULATION WITHIN SPECIFIED DISTANCES



Source - Graphic Exposure Modeling System (GEMS)

variation. Average population within 5 kilometers for primary commodities within states was the highest for Molybdenum mines in Michigan (13,707) and New Jersey Zinc mines (10,143).

Average population within 5 kilometers for Iron mines in Minnesota and Phosphate mines in Florida are 5217 and 2055 people respectively. Arizona Copper mines have an average population of 1500 people within 5 kilometers. Average population within 5 kilometers for the 35 primary Uranium mines in Colorado is only 184 people. Primary Gold mines in Nevada and Montana, which account for almost half of the these mines, have respective average populations of only 10 and 49 people within 5 kilometers. There was no reported population in a number of other state/commodity combinations. Table 4 provides average population within 5 kilometers by state and selected primary commodity.

As mentioned previously, the GEMS data reflect the isolated geographical location of a large number of the mines. Of the four states with the largest number of sites (Colorado, Nevada, Arizona, and Idaho) none is among the 20 most populous states. These four states account for almost half of the 292 sites studied. While present population in these states may imply a lower probability of human exposure, exposure potential in the future may be greater due to increasing population in the west, particularly the mountain region. During the ten year period from 1970 to 1980, the mountain region experienced a population increase of over 37 percent, the largest of any region in the country.

Distance to Nearest Population

In addition to determining the distance to population through the use of the GEMS data base, we have determined the distance to the nearest population to the mines by the use of USGS

TABLE 4

AVERAGE POPULATION WITHIN 5 KILOMETERS
BY STATE AND SELECTED PRIMARY COMMODITY

	URANIUM	GOLD	IRON	PHOSPHATE	COPPER	SILVER	LEAD	MOLYBDENUM	ZINC	ASBESTOS	TOTAL
CO	184	378				510	3	0	409		183
NV		10	0			0		0			4
AZ		3,123			1,500	0	0				1,569
MN			5,217								5,217
ID		0		39		2,068	3,464	0	709		973
FL				2,055							1,969
NM	92	372			194	0		0			147
UT	3	0	0	0	427	0	427				58
CA		3,280	0		14					0	1,641
MT		49		220		0	0				47
MO			1,589				503				1,406
TN					2,102				3,739		3,505
WY	108										108
NY									1,794		1,196
TX	0		509								407
MI			1,536					13,707			4,579
WA	61	1,018									380
AR											7,334
SD		6,597									3,299
PA								6,051			6,557
OR		0									0
IL						2,083					2,083
GA											89
VT										612	612
KY											6,303
AL											876
NJ									10,143		10,143
NC				0							0
IA								3,083			3,083
TOTAL	135	872	3,397	1,408	1,290	670	692	1,757	3,389	204	1,279

* Total Averages May Not Reflect Detail
Due to the Exclusion Of Some Commodities From Table

Source - Graphic Exposure Modeling System (GEMS)

maps. The maps reported populations in a variety of settings, ranging from towns to ranches and single family residences to trailer parks.

We compared the GEMS results with the results of the USGS map searches, and found fairly consistent results. Based on GEMS data, there are 135 mines which have populations within 5 kilometers. Data compiled through the use of USGS maps show that 153 mines have a potentially exposed population within 3 miles (~ 5 kilometers).

Applying the USGS measurements to the 135 mines with populations within 5 kilometers (based on GEMS data), we arrive at an average distance to population of 1.6 miles (2.6 kilometers). Therefore, the populations within the 5 kilometer ring around the mines are likely to be substantially closer than 5 kilometers.

Proximity of Sites to Public Drinking Water Systems

If mining sites are close to public water systems, there may be potential for human exposure through drinking water supplies. We explored the location of sites in relation to public drinking water systems using the Federal Reporting Data System (FRDS), developed by EPA's Office of Drinking Water.

The FRDS data base provides the number of public water supply systems, both surface water and groundwater, and population using the systems within specified distances. It should be noted that the FRDS data base locates water systems based on the centroid of the zip code of the mailing address of each utility. The actual location of the intake or well may be different. This can cause some inaccuracy in calculations of the distance from mines to public water supplies. Based on information contained on the USGS 7 and 1/2 minute maps, we

believe the estimate of the number of drinking water supplies within 5 kilometers of the mines from FRDS may be understated.

We performed FRDS runs for distances of 5, 10, and 15 kilometers around the mine sites. Within a distance of 5 kilometers, FRDS reported less than 22 percent of the 292 mines having public water systems. Within 10 kilometers, the percentage of mines with public water systems increased to 40 percent. Even at 15 kilometers, only 54 percent of the 292 mines had public water systems. Table 5 shows the number of public drinking water systems within 5, 10, and 15 kilometers.

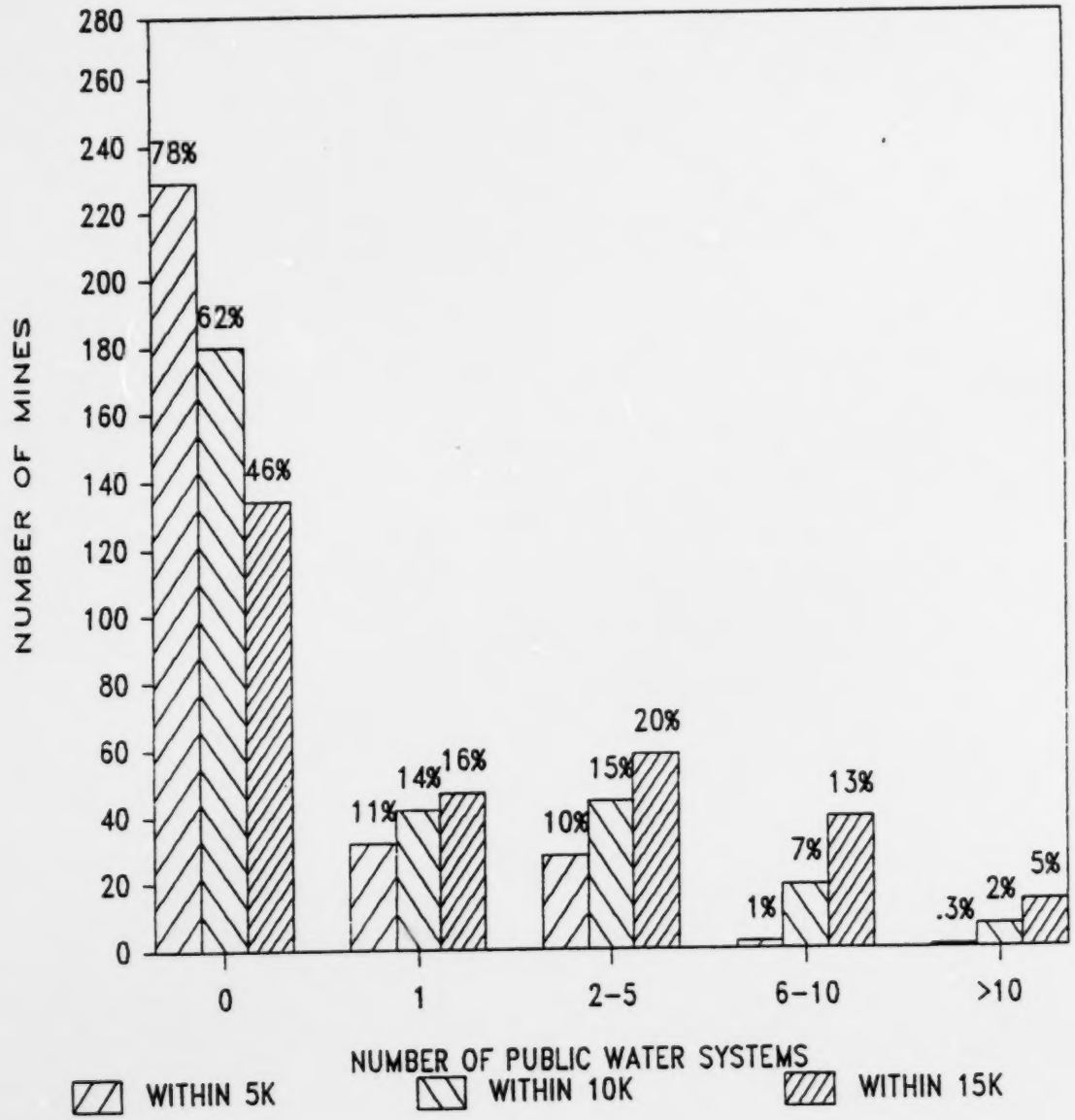
Population served by these water systems was small for the majority of the mines. For the systems within 5 kilometers, nearly 70 percent served fewer than 1000 people. More than 58 percent of systems within 10 kilometers served fewer than 1000 people. Half of the systems within 15 kilometers still served fewer than 1000 people.

Tables 6, 7, and 8 show the population served by public water systems within specified distances for the 292 mines.

Due to the fact that less than one quarter of the mines had public water systems within 5 kilometers, and population served by those that did was for the most part minimal, there does not seem to be a high potential for human exposure via drinking water routes for waste contaminants from mining sites. However, since there is some uncertainty as to the location of the actual drinking water intakes or wells, potential exposure may be greater than these results indicate. In comparing the results from the FRDS runs with observations from the USGS 7 and 1/2 minute maps, we found that there were 18 mines which had towns within 3 miles which FRDS did not show as having any water systems within 5

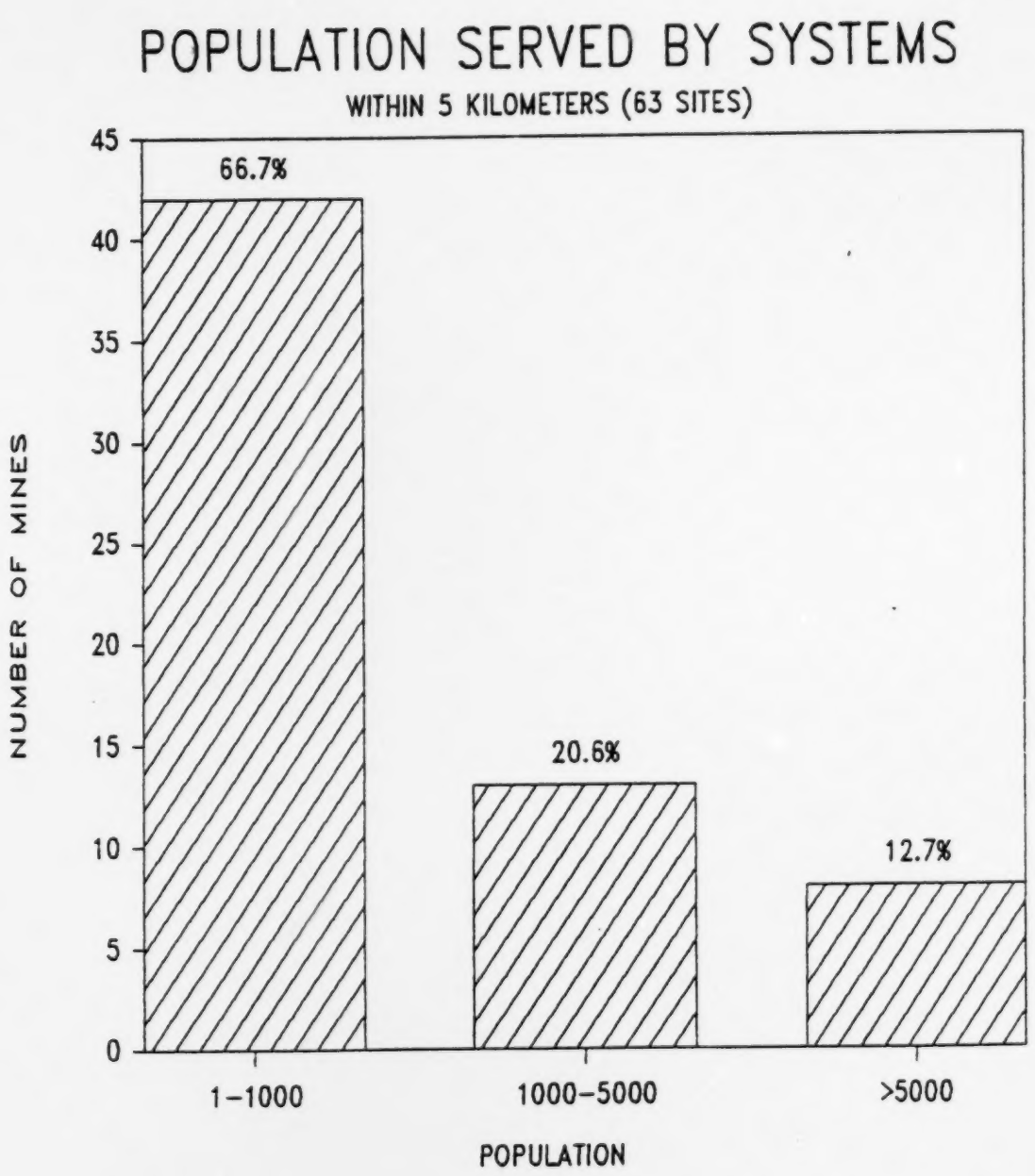
TABLE 5

PUBLIC WATER SYSTEMS



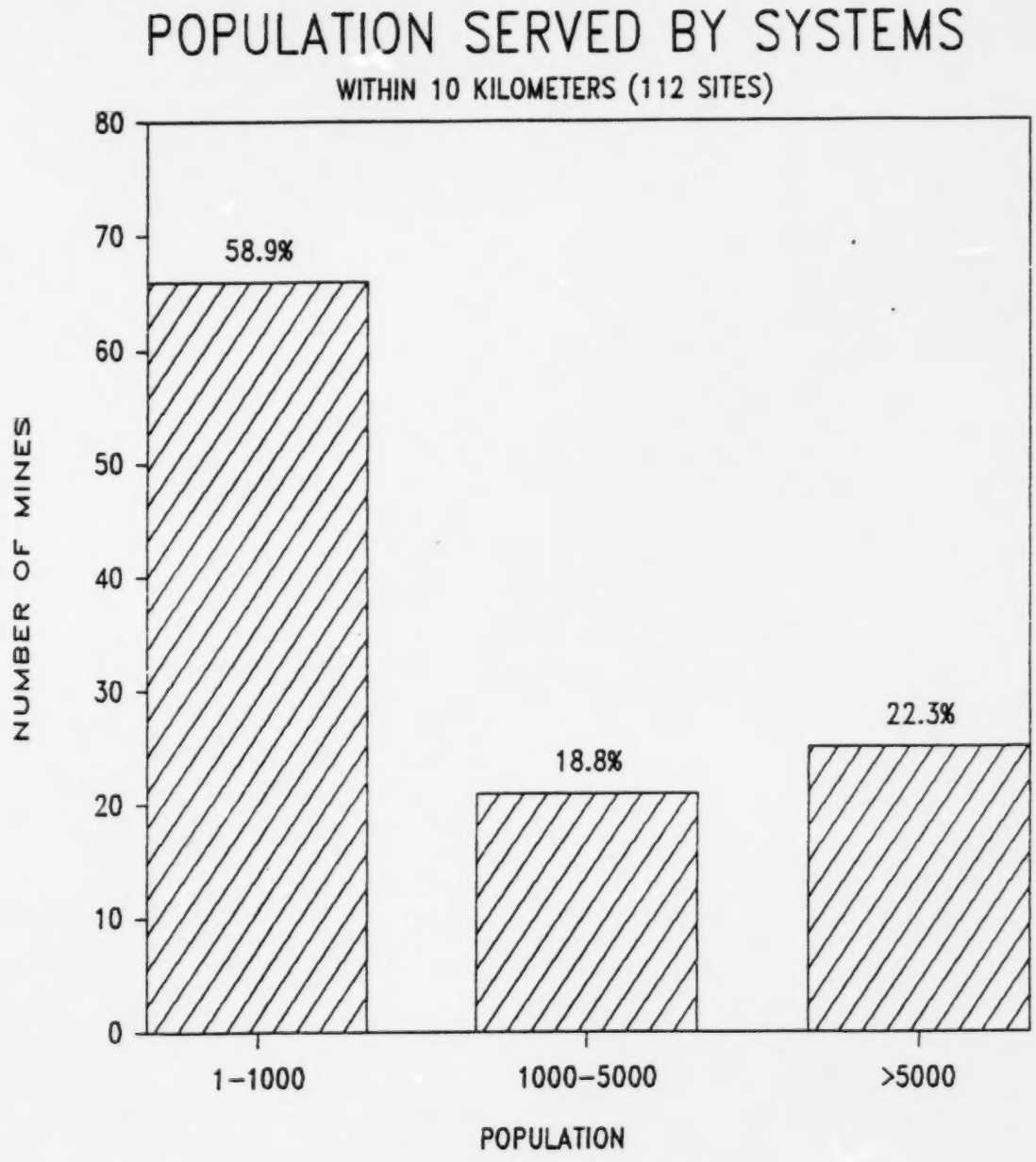
Source - Federal Reporting Data System (FRDS)

TABLE 6



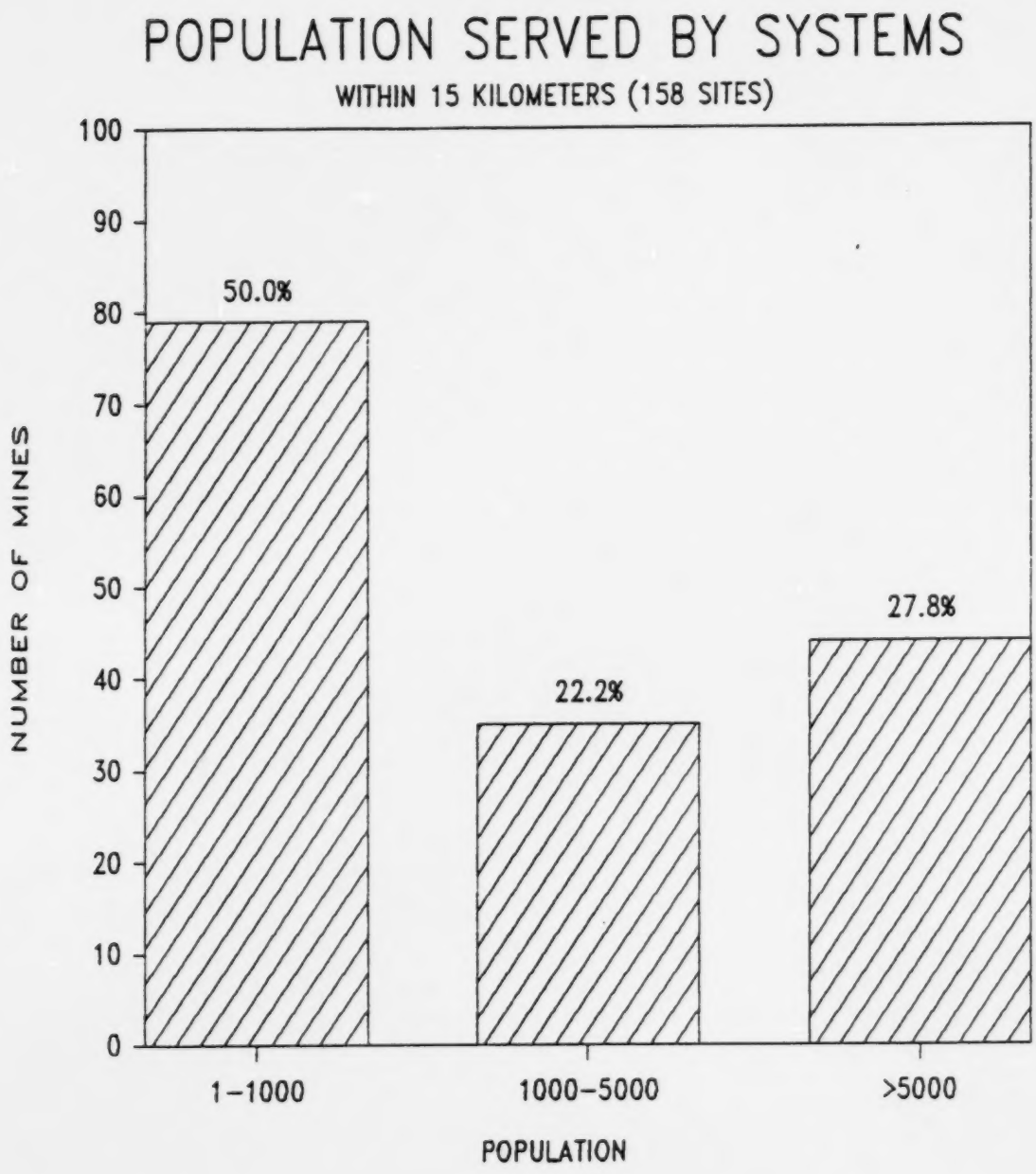
Source - Federal Reporting Data System (FRDS)

TABLE 7



Source - Federal Reporting Data System (FRDS)

TABLE 8



Source - Federal Reporting Data System (FRDS)

kilometers. We would expect each of these towns to have a water supply nearby. Therefore, while we can still conclude that the potential for exposure through drinking water is limited, the potential may not be as small as the FRDS results imply.

ENVIRONMENTAL CHARACTERISTICS OF MINING SITES

Characteristics of the mining sites, such as distance to surface water, topographic slope between mine and nearest surface water body, depth to groundwater, net recharge, hydraulic conductivity, and storm intensity will have a significant effect on the potential for exposure. We used a variety of sources, including the DRASTIC System and U.S. Geological Survey maps, to compile information on these and other environmental characteristics.

Distance and Slope to Surface Water

In order to obtain the most reliable information, we decided to use USGS maps to calculate the distance to surface water and topographic slope. Using the latitude and longitude of each site, the appropriate 7 1/2 or 15 minute USGS maps were ordered from state map indexes. Mine sites were then located on the quadrangle maps. When the mine site was not labeled or identifiable on the map, the latitude and longitude were used to calculate distances. In cases where the site was labeled on the map, that labeled location, or, if possible, the downgradient edge of the open pit or tailings pile, was used for any measurements.

The average distance from mine site to surface water body for the 292 total mines was 1693 feet, with a standard deviation

of 2770 feet. Distances ranged from 0 to 22,000 feet, excluding those mine sites which did not connect hydrologically with any surface water body. Over 90 percent of the mines were within 5000 feet of surface water; more than 60 percent were within 1000 feet of a surface water body. The relative proximity of mining sites to surface water bodies increases the potential for exposure. Table 9 provides the number and percentage of sites within specified distances of surface water.

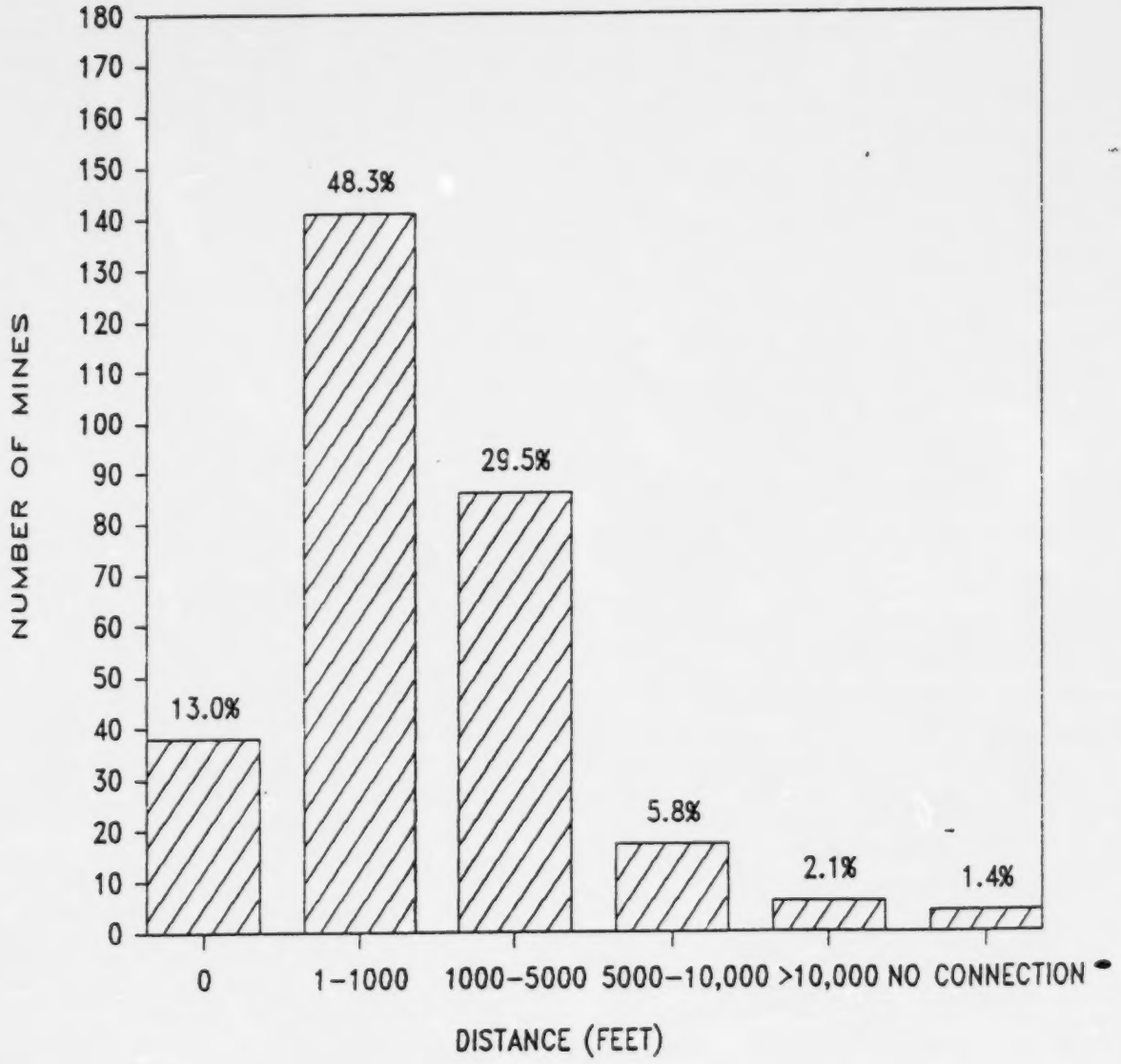
Topographic slope between the mine site and the nearest surface water body can influence runoff patterns and thus the potential for exposure. Slopes ranged from 0 to 110 percent with an average of 15.4 percent. Forty percent of the mines had a slope between 0 and 5 percent, suggesting limited exposure potential via runoff from mining waste management operations. The majority of mines had a slope under 30 percent; 23 sites, however, did have a slope over 50 percent. These results are characteristic of many of the elements we studied; there is wide variation among mines in terms of the factors that affect potential exposure.

Area of Waste Management Operations

We compiled data on the area of waste management operations from the 1985 Report to Congress. The average area of tailings impoundments is about 500 acres for the mines studied in the Report to Congress. Waste piles average 126 acres. These large areas illustrate the difficulty of using point estimates to locate the mines for use with GEMS, FRDS, and the Heritage data bases. The potential for exposure may be more or less than the results indicate since population, water utilities, and flora and fauna will be closer to some parts of the mines than to the point represented by the latitude and longitude.

TABLE 9

DISTANCE TO SURFACE WATER



Source - U.S. Geological Survey Maps

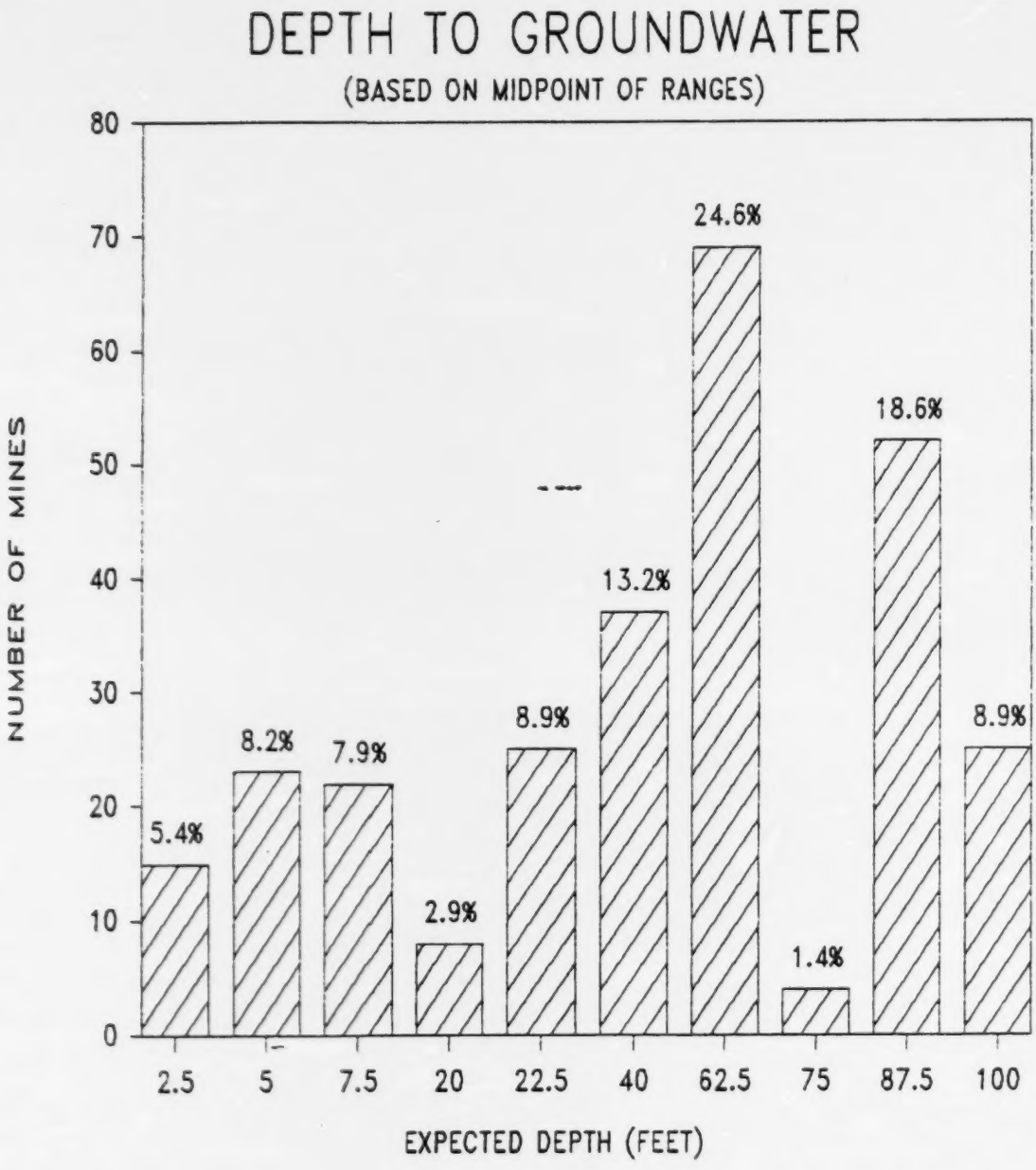
Hydrologic Measurements

In order to characterize the mine sites in terms of hydrologic elements, the topographic maps were compared with a map showing the outlines of the eleven major DRASTIC regions. The DRASTIC system, developed by the National Well Water Association, categorizes aquifers based on geographic location.

Depth to groundwater was tabulated in feet and based on ten ranges, 0-5; 0-10; 5-15; 10-30; 15-30; 30-50; 50-75; 50-100; 75-100; 100+. Mines were grouped into one of these ranges based on the DRASTIC subregion and specific location in which each mine site was located. Over 40 percent of the sites had a distance to groundwater between 50 and 100 feet, indicating quite limited potential for groundwater contamination. A fairly even number of sites fell into other ranges, reflecting diverse but limited potential for exposure. Table 10 provides the number and percentage of sites within each range, based on the midpoint of the range.

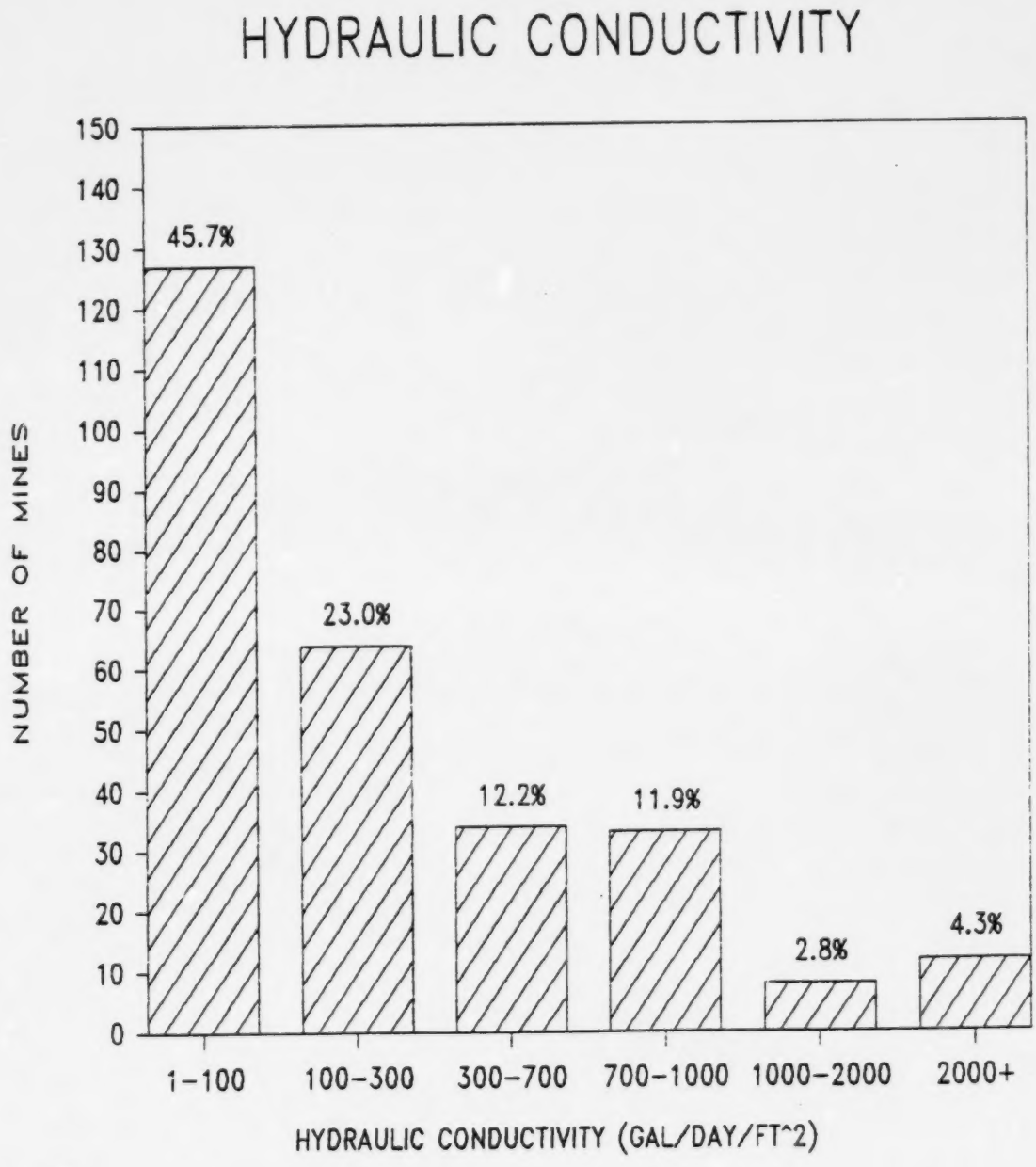
Hydraulic conductivity was measured in gallons per day per square foot and based on six ranges: 1-100; 100-300; 300-700; 700-1000; 1000-2000; 2000+. Hydraulic conductivity is an indication of the ease with which contaminants may be transported through the geologic substrate. Conductivity was based on the DRASTIC subregion and the specific location of the mine. Over 40 percent of the mines were characterized by a hydraulic conductivity of 1-100 gal/day/ft^2, indicating a long time frame for waste migration and limited potential for exposure. A fairly even number of mines fell into the other five ranges, indicating the diversity among sites. Table 11 provides the number and percentage of mines falling into each range.

TABLE 10



Source - DRASTIC system, National Well Water Association (NWWA)

TABLE 11



Source - DRASTIC system, National Well Water Association (NWWA)

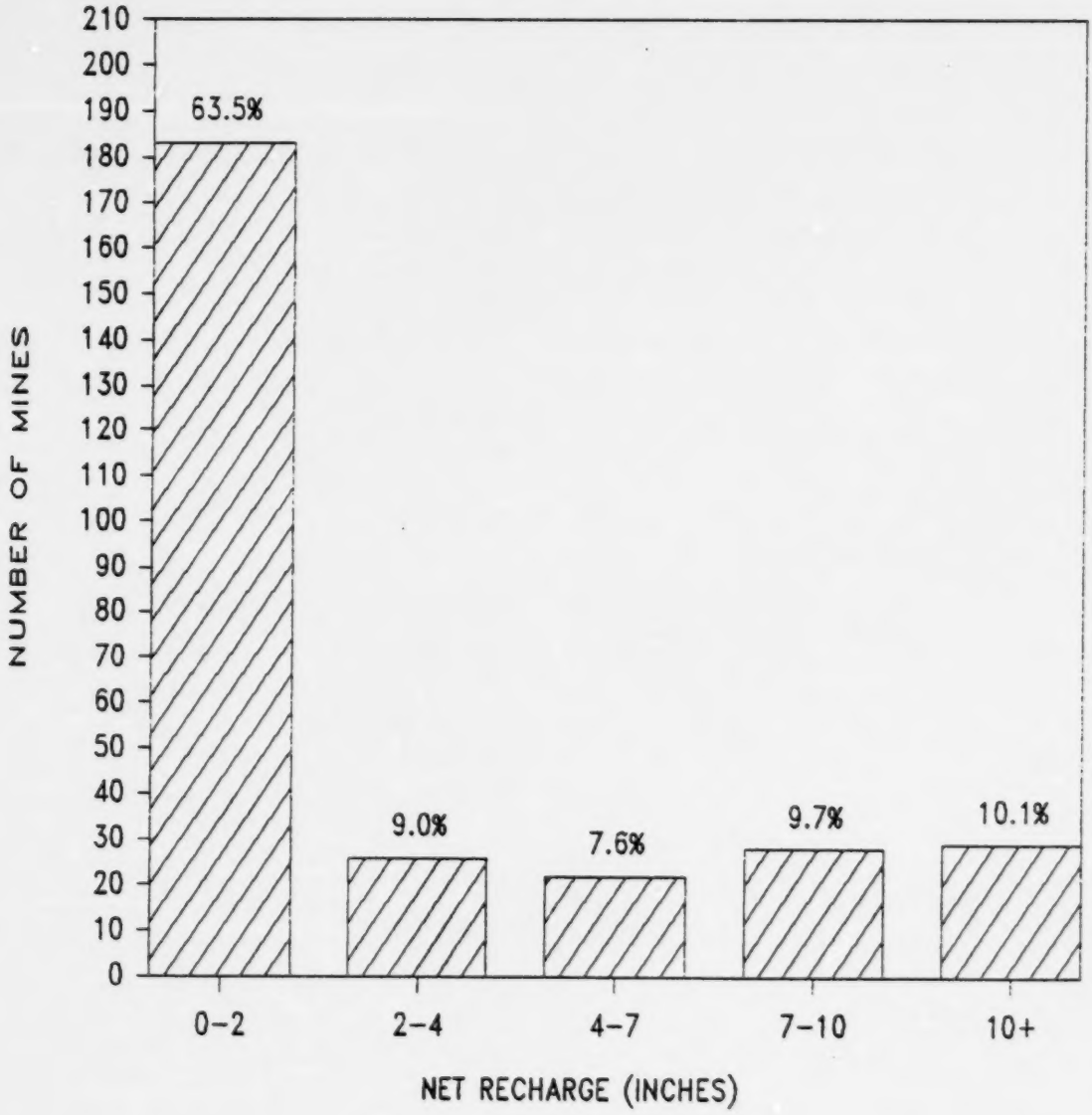
Net recharge is a measure of the net precipitation after evapo-transporation and estimated runoff is subtracted. Smaller recharges imply longer periods of time for contaminants to travel through the unsaturated zone. Recharge was measured in inches and based on five ranges, 0-2; 2-4; 4-7; 7-10; 10+. Mines fell into one of these ranges based on the DRASTIC subregion and the specific location of each mine site. More than 60 percent of the mines were characterized by a net recharge of between 0 and 2 inches, indicating that the majority of mines are in extremely arid climates. Table 12 provides the number and percentage of sites within each range of net recharge.

Storm intensity is another indication of the severity of potential runoff problems; as intensity increases so too does the probability and volume of runoff. Intensity data were derived from "Rainfall Depths for the 25-Year Recurrence Interval for Storm Durations of 30 Minutes to 24 Hours," by Herschfield. Thirty-minute storm intensity ranged from .5 to 2.8 inches with an average of 1.3 inches. Twenty-four hour storm intensity ranged from 1.5 to 10 inches with an average of 3.9 inches.

Groundwater hardness and quality problems will have an effect on potential exposure since excessive hardness or quality problems can render groundwater undrinkable. Maps of aquifer hardness and groundwater quality problems were overlayed on mines site maps to identify general groundwater conditions. The groundwater maps are based on information from the 1973 Water Atlas of the United States and the U.S. Water Resources Council, 1978. Groundwater hardness was measured in parts per million of calcium carbonate ($CaCO_3$), and based on five ranges, <80; 80-120; 120-180; 180-240; >240. Groundwater quality problems such as level of Total Dissolved Solids, and the extent of pollution were also assessed. In general,

TABLE 12

NET RECHARGE



Source - DRASTIC system, National Well Water Association (NWWA)

groundwater with a hardness of over 240 ppm of CaCO3 is considered undrinkable and requires treatment. Treatment may also be required for groundwater which has a high level of TDS or has significant pollution. Over 36 percent of the mines studied had groundwater with at least one of these three characteristics. Groundwater hardness of 180-240 may also require treatment, bringing the number of sites whose groundwater may require treatment to 209, or over 70 percent of all mines. Due to the fact that over 70 percent of all mines groundwater may already mandate treatment, the exposure potential through groundwater appears limited. Table 13 shows the number and percentage of sites within each range of groundwater hardness.

ECOLOGICAL CHARACTERISTICS OF MINING SITES

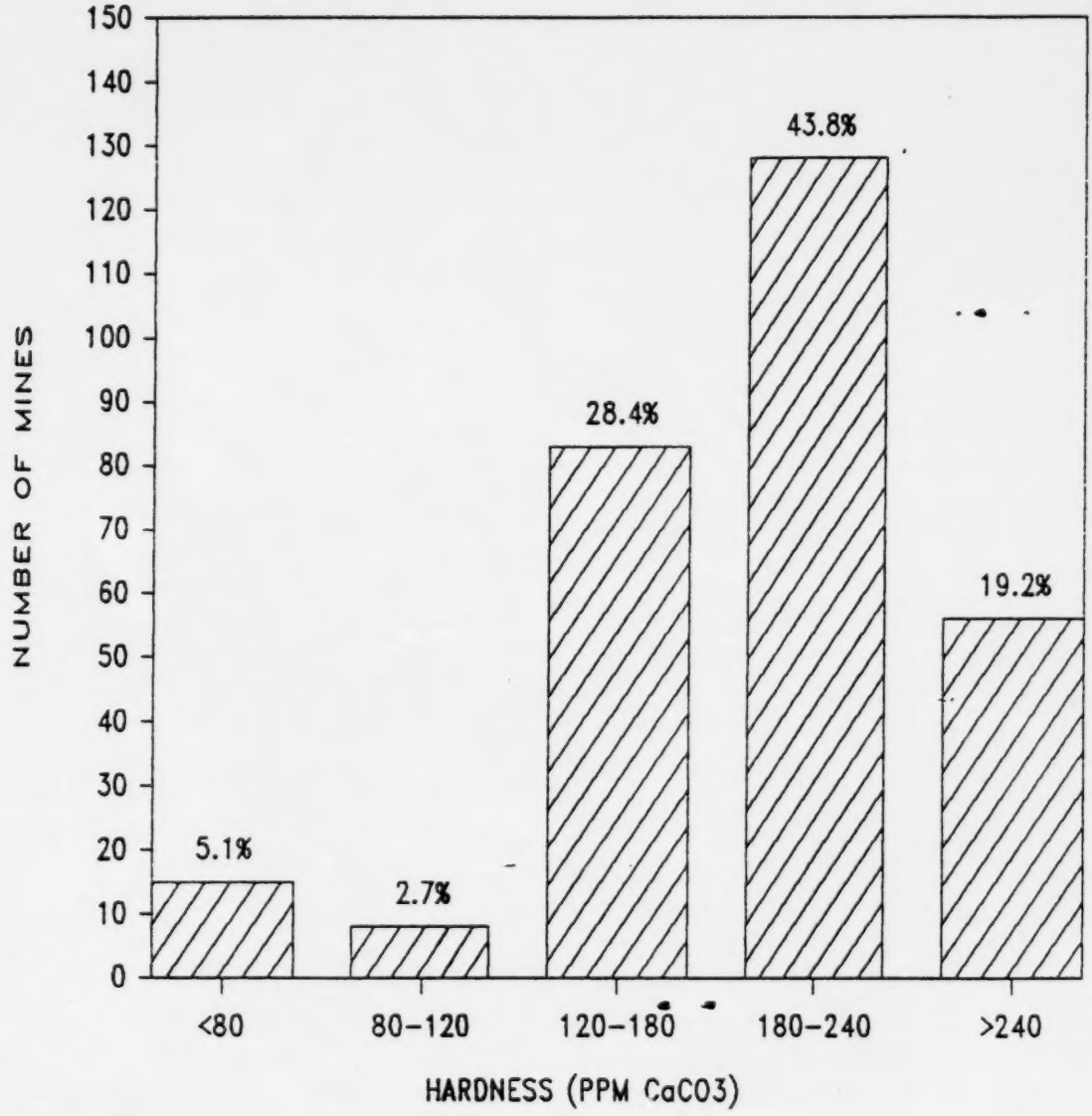
In addition to determining the potential for human exposure, we have compiled ecological data on the mining sites to assess this potential for exposure. We have coordinated with state Heritage Programs to determine if any species of concern are within the area of the mining sites.

The state Heritage Programs develop and maintain data bases which inventory jeopardized species and natural communities within each state. Heritage Programs currently exist in forty-three states and some data are available from secondary sources for the states which do not have Programs. It should be noted that there is some variation in the quality of data available from different states; some state Heritage Programs are fairly new and basic data collection is still ongoing.

While it may not currently be possible to quantitatively model risk to ecosystems from mining waste, the information provided by the Heritage Program can at least tell us on a site specific basis whether there are any jeopardized species

TABLE 13

GROUNDWATER HARDNESS



Source - Overlay Maps From "Groundwater Contamination in The U.S.", University of Pennsylvania Press, 1983.

near a mining site. Using these data can help to maintain species and natural communities which are particularly vulnerable, thereby promoting ecosystem diversity.

We supplied the Heritage Program staff with latitudes and longitudes for each of the 292 mines. Using these coordinates they performed a search of their data base for rare or endangered species within a specified distance around the mine location. Following discussions with Heritage Program personnel, we designated five kilometers as a standard distance for the searches.

Based on the Heritage Programs' information and opinion on species surrounding the mines, we have designated each site as either Category 1, 2, or 3. Category 1 includes sites having no endangered/threatened or special concern species in the area of the mine. Category 2 includes mines which have species of special concern, although they are not endangered/threatened. Also included in this category are mines for which the Heritage Programs had no data but believed there were species of special concern present. Category 3 sites are ones which have endangered/threatened species in the vicinity of the mines.

We were able to obtain information on 274 of the 292 mines studied. Over 30 percent of these mines fell into Category 3, and another 16 percent fell into Category 2. Thus, close to fifty percent of the mines were characterized as having threatened, endangered, or other species of special concern in the area of the mine. Category 3 sites had an average of 2.6 species per site, and Category 2 and 3 sites combined had an average of 2.4 species per site. Based on these results, there is a relatively high exposure potential to sensitive

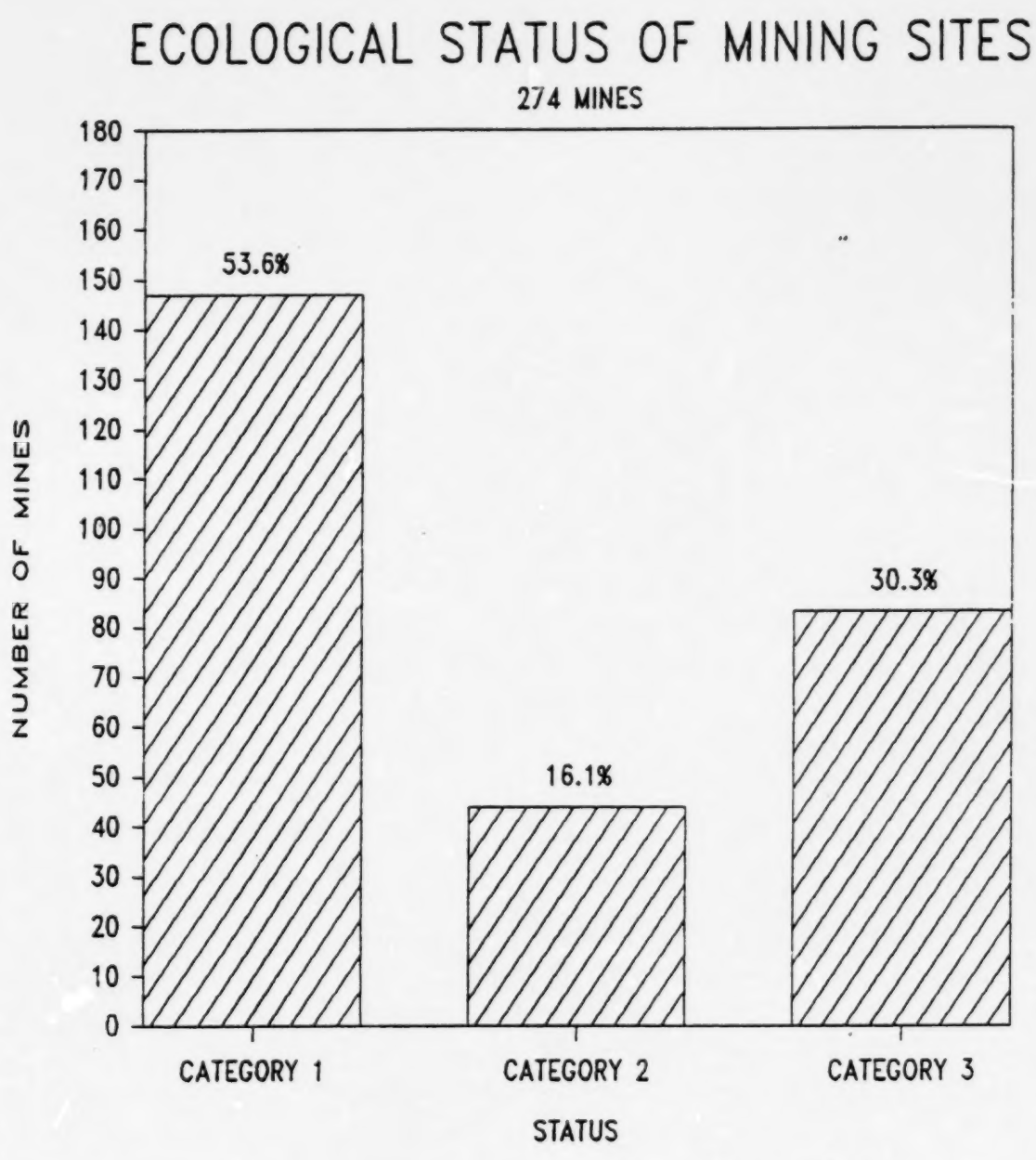
species from mining waste. Table 14 provides the number and percentage of mines in each of the three Categories.

MULTIVARIATE ANALYSIS

In the previous three sections of this report we independently analyzed the population, environmental, and ecological characteristics of mining sites. By looking at a number of these factors simultaneously, we can determine interactions that effect the overall potential for exposure at mining sites.

As mentioned previously, only 22 percent of the mines have public drinking water systems within 5 kilometers. Furthermore, some of these systems may use groundwater which requires treatment before it can be used for drinking water; groundwater which has a hardness greater than 180 ppm CaCO3, a high level of Total Dissolved Solids (TDS), or significant pollution is likely to be treated if it is used as a drinking water source. Nearly 70 percent of mines which contained a system within 5 kilometers had groundwater which met these conditions, and thus is likely to be treated if used as a water source. Sixty-seven percent of the mines with a system within 10 kilometers had groundwater which may require treatment, and well over half of the sites with a system within 15 kilometers had groundwater characterized by one of the conditions which may require treatment. These results show that exposure potential through drinking water routes is likely to be even less than the FRDS data alone indicate. Only 44 mines, or 15 percent, have public water systems within 5 kilometers which, if groundwater is used as a drinking water source, do not probably already require treatment. At 10 kilometers only 26 percent of all mines have good groundwater and a drinking water system, and at 15 kilometers mines with public water systems and good groudwater accounted for only 32 percent of all mines.

TABLE 14



CATEGORY 1 - NO SPECIAL CONCERN OR ENDANGERED/THREATEND SPECIES PRESENT

CATEGORY 2 - SPECIES OF SPECIAL CONCERN PRESENT

CATEGORY 3 - ENDANGERED/THREATENED SPECIES PRESENT

Source - State Heritage Programs

As mentioned previously, the majority of mining sites are in arid climates. This, coupled with the fact that most mines have a substantial depth to groundwater, indicate a limited potential for exposure through groundwater contamination. We developed the percentage of mining sites which had a net recharge greater than 4 inches as well as a depth to groundwater of 10 feet or less as a measure of sites most likely to develop groundwater contamination problems. Only 50 sites, or 17 percent of all mines contained both of these characteristics. Conversely, 139 mines, or 48 percent of all mines had a net recharge less than 2 inches and a depth to groundwater greater than 50 feet, illustrating their limited potential for groundwater contamination.

Similarly, we developed the percentage of mines which, based on topographic slope and distance to surface water, had a high potential for exposure via runoff. Only 62 sites, or 21 percent of all mines were characterized by a slope of 15 percent or more, and a distance to surface water of less than 1000 feet. These results indicate a limited exposure potential through runoff to surface water bodies. A slightly higher percentage of mines showed an extremely limited potential for exposure through surface water. Sixty-eight mines, or 23 percent, had a slope less than 10 percent and a distance to surface water greater than 1000 feet.

EXPOSURE POTENTIAL AT MINING SITES AND SUBTITLE C SITES

In addition to compiling data on mining sites, we have also assembled data on Subtitle C land disposal facilities, in order to compare factors influencing exposure with those for mining sites. Based on this comparison, we found that there appears to be a substantially higher potential for human exposure at Subtitle C facilities.

We utilized a number of data sources for information on Subtitle C land disposal facilities. When data on the entire universe of Subtitle C facilities were available we incorporated it; in most cases, however, data on only a sample of the universe were available.

Our universe of Subtitle C land disposal facilities was based on the population of 517 active land disposal facilities in the Consolidated Data Base, developed by EPA's Office of Waste Program Enforcement. We used the sites included in this data base for determining the geographic distribution of facilities, as well as for use in the GEMS and FRDS programs. To compile data on the volume of waste managed by Subtitle C facilities and the size of the largest surface impoundments, we used the "National Survey of Hazardous Waste Generators and Treatment Storage and Disposal Facilities Regulated Under RCRA in 1981" (OSW's RIA Mail Survey), conducted by EPA in 1982. This survey provides detailed information on waste management practices in 1981., To determine the average distance to surface water and the average size for Subtitle C facilities, we used the 1985 Part B Data Base, developed by EPA's Office of Solid Waste. Distance to surface water was also derived from data on sites included in the Liner Location Model, developed by EPA's Offic of Solid Waste. Data on net recharge and depth to groundwater was assembled from data on 55 Subtitle C facilities, included in "Development of a Facilities Data Base for Use in the Cross-Program Analysis", developed by EPA's Office of Solid Waste.

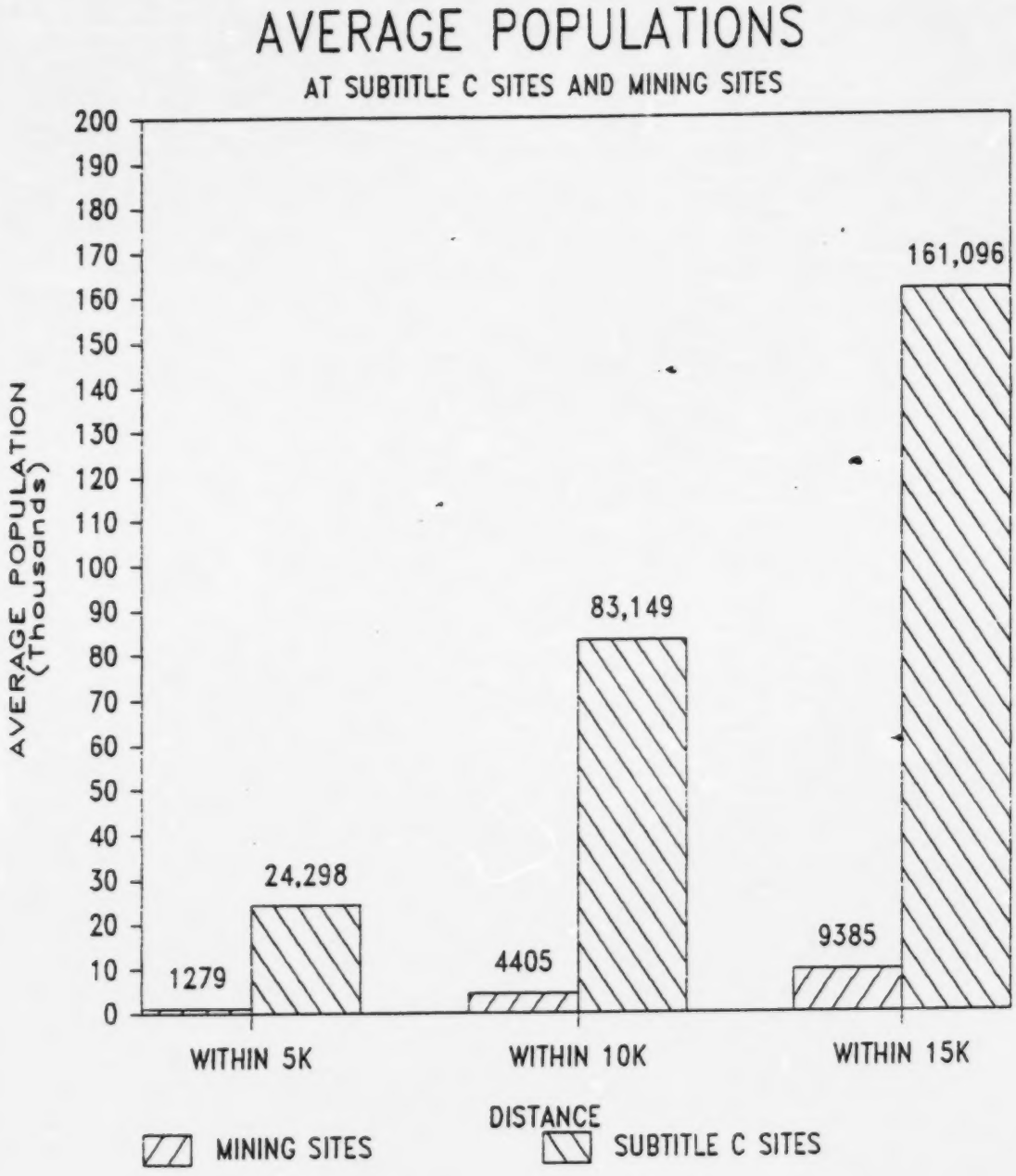
There is a much greater exposure potential to human population at Subtitle C land disposal facilities than there is at mining sites, based on proximity of population and public water systems. Average population within 5 kilometers for the 517 Subtitle C land disposal sites was 24,298 people, while the average at mining sites was only 1279 people. Population

within 10 kilometers for industrial land disposal facilities was on average 83,149 while the average for mining sites was 4405. Average population within 1 and 5 miles of mining sites was only 173 and 2932 people respectively. Subtitle C sites had an average population of 2206 within 1 mile and 57,289 within 5 miles. Table 15 shows the average population for Subtitle C facilities and mining sites within 5, 10, and 15 kilometers.

The FRDS data show similar results to the GEMS data. Within 5 kilometers, 46 percent of land disposal facilities had a public water system, as compared to only 22 percent for mining sites. The average population served was 10,453 for Subtitle C land disposal facilities, while the average was only 2484 people for mining sites. Within a distance of 5 miles, 69 percent of Subtitle C sites had a public water system, serving an average population of 18,056 people. Only 36 percent of mining sites had a public water system within 5 miles, serving an average population of 3720 people. Within 10 kilometers, 75 percent of land disposal facilities, but only 40 percent of mines, had at least one public water system. Again, average population served was greater for the Subtitle C facilities. Within 10 kilometers the average population served was 24,149 for Subtitle C facilities, but only 3854 for mining sites. Table 16 provides the percentage of Subtitle C sites and mining sites having public water systems within 5, 10, and 15 kilometers.

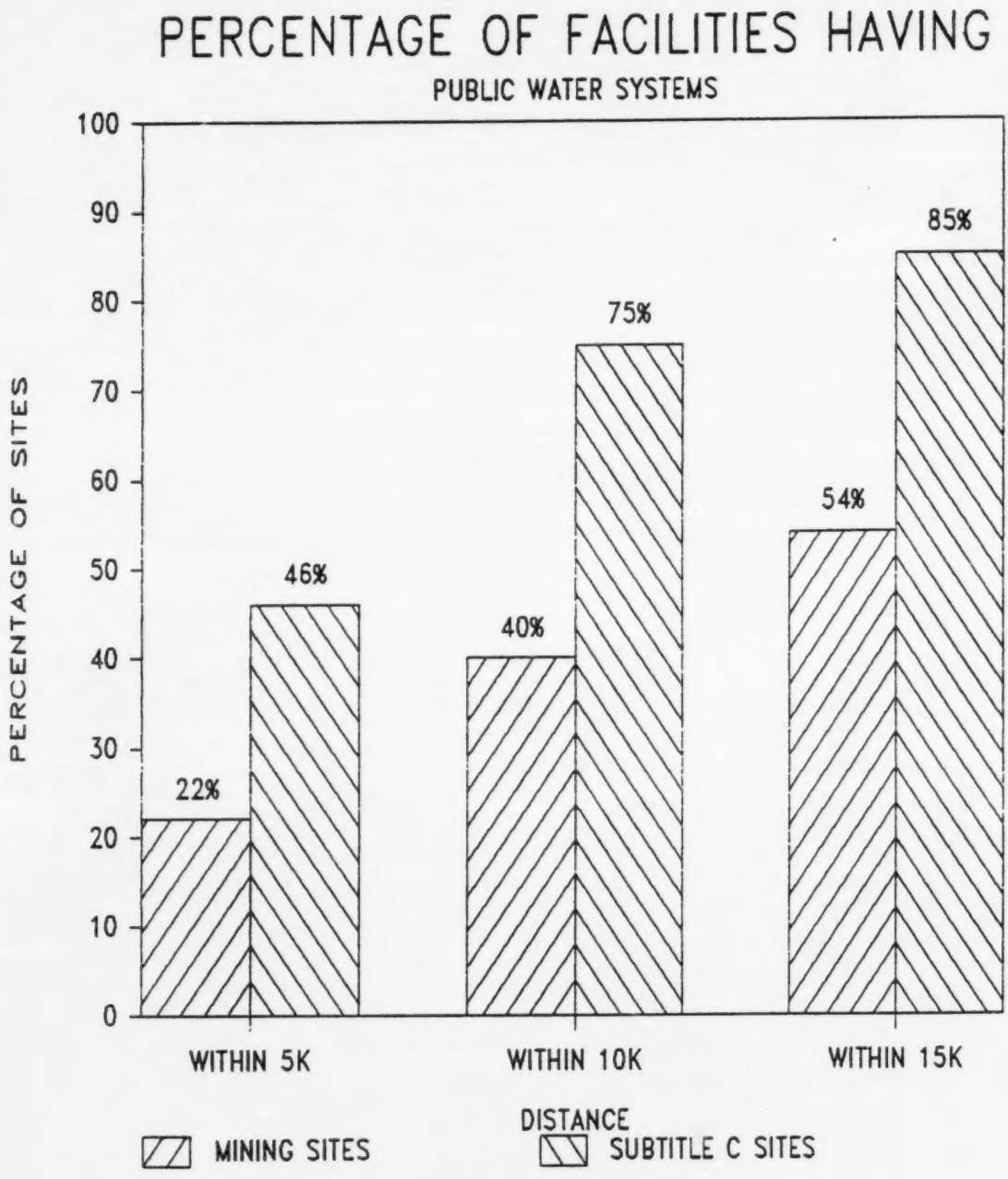
The geographic distribution of sites show a different pattern for mining sites than for Subtitle C land disposal facilities. Over 84 percent of mining sites are west of the Mississippi River, while Subtitle C land disposal facilities are evenly distributed, with approximately 50 percent west of the Mississippi River. This may be a reason for the larger populations surrounding Subtitle C facilities, which have a higher percentage of sites in the eastern region of the country.

TABLE 15



Source - Graphic Exposure Modeling System (GEMS)

TABLE 16



Source - Federal Reporting Data System (FRDS)

Mining sites are concentrated in a fewer number of states than are Subtitle C land disposal facilities. The five states with the highest number of mines accounted for over 50 percent of the 292 mines studied, while the top 10 states accounted for over 80 percent. The five states with the highest concentration of Subtitle C land disposal facilities accounted for less than 40 percent of the total number of facilities, while the top 10 states accounted for less than 60 percent. Table 17 and 18 provide number of facilities by state for Subtitle C sites and mining sites.

Perhaps somewhat offsetting proximity to population, mining waste management facilities are much larger than Subtitle C land disposal facilities, based on both size and amount of waste managed. The Report to Congress reports that tailings impoundments at mining sites average 500 acres with the largest over 5000 acres, and that waste piles average 126 acres, with the largest exceeding 500 acres. Based on the facilities in the Part B data base, average size for Subtitle C surface impoundments is only 2.5 acres, while the RIA Mail Survey had an average of 6.1 acres per surface impoundments, with the three largest being 735, 640, and 100 acres. Thus, only the two largest reported hazardous waste impoundments were bigger than the average mining impoundment. Based on the Part B data base, Subtitle C waste piles averaged only 0.72 acres, and landfills averaged 13.64 acres. The average size for Subtitle C landfills, as derived from the facilities included in the Cross Program Analysis, is only 10.44 acres.

The Report to Congress states that the average mining facility manages about 3 million metric tons of waste annually. This is much more than the average at Subtitle C facilities. Based on annual total waste managed and the number of facilities in the RIA Survey, the average Subtitle C site manages only 55 thousand metric tons of waste annually.

TABLE 17

NUMBER OF SUBTITLE C LAND DISPOSAL FACILITIES BY STATE

STATE	NUMBER OF FACILITIES	CUMULATIVE PERCENT
TX	85	16.4%
LA	39	24.0
OH	26	29.0
CA	26	34.0
IL	25	38.9
PA	24	43.5
MI	24	48.2
CT	18	51.6
OK	16	54.7
NY	15	57.6
FL	14	60.3
IN	13	62.9
WV	12	65.2
KY	11	67.3
AL	11	69.4
SC	10	71.4
MO	10	73.3
VA	10	75.2
GA	9	77.0
NJ	9	78.7
WA	9	80.5
TN	9	82.2
AR	8	83.8
MS	8	85.3
UT	8	86.8
NM	8	88.4
WY	7	89.7
MT	5	90.7
NC	5	91.7
CO	5	92.6
PR	4	93.4
MD	4	94.2
KS	4	95.0
WI	3	95.6
MA	3	96.1
NV	3	96.7
AZ	3	97.3
DE	2	97.7
OR	2	98.1
IA	2	98.5
MN	2	98.8
ID	2	99.2
HI	1	99.4
VI	1	99.6
AK	1	99.8
ND	1	100.0
TOTAL	517	

Source - Consolidated Data Base,
Office of Waste Program Enforcement, EPA

TABLE 18

NUMBER OF MINING SITES
BY STATE

STATE	NUMBER OF MINES	CUMULATIVE PERCENT
CO	52	17.8%
NV	30	28.1
AZ	29	38.0
ID	23	45.9
FL	23	53.8
NM	21	61.0
MN	18	67.1
UT	15	72.3
CA	14	77.1
MT	12	81.2
MO	10	84.6
TN	7	87.0
WY	6	89.0
TX	5	90.8
MI	4	92.1
AR	3	93.2
NY	3	94.2
WA	3	95.2
SD	2	95.9
PA	2	96.6
OR	2	97.3
IL	1	97.6
AL	1	97.9
NJ	1	98.3
VT	1	98.6
GA	1	99.0
KY	1	99.3
NC	1	99.7
IA	1	100.0
TOTAL	292	

Source - U.S. Bureau of Mines,
Division of Minerals Information

As mentioned previously, in the discussion on environmental characteristics of mining sites, the average distance to surface water for mining sites was relatively close: approximately 1700 feet. This is much closer than the average for Subtitle C facilities. The sites in the Liner Location Model averaged over 3000 feet to surface water, and the sites included in the Part B data base averaged over 2600 feet.

In addition to compiling Heritage Program data on the existence of vulnerable species around mining sites, we have compiled similar information on a random sample of 80 hazardous waste land disposal sites. Both the mining sites and the land disposal facilities contained vulnerable species in approximately half of the sites. Over 30 percent of the 292 mining sites had either endangered or threatened species in the area, while 29 percent of the 80 land disposal facilities had endangered/threatened species. Approximately 47 percent of both the mining sites and the land disposal facilities studied had an endangered, threatened, or species of concern within 5 kilometers.

Based on net recharge, mining sites are in much drier climates than Subtitle C facilities. Over 60 percent of the 292 mines studied have a net recharge between 0-2 inches, and only about 10 percent have net recharge greater than 10 inches. Only about 20 percent of the 55 land disposal facilities in the Cross-Program Analysis data base have net recharge less than 5 inches, and about 35 percent exceed 15 inches of recharge.

Not only are climates wetter at Subtitle C land disposal facilities, they are also closer to groundwater than mining sites. Thirty-eight percent of the 55 Subtitle C facilities included in the Cross-Program Analysis data base are within 10 feet of groundwater, and over 70 percent are within 30 feet or less. About 20 percent of the 292 mining sites have a depth to groundwater of 0-10 feet, and only 32 percent have a depth of 30 feet or less.

APPENDIX 1

DATA ENTRY DESCRIPTIONS FOR APPENDIX 1

TOTO_1 = TOTAL POP IN 0_1 KM RING
TOT TO 5K = TOTAL POPULATION WITHIN 5 KM
TOT TO 10K = TOTAL POPULATION WITHIN 10 KM
TOTAL = TOTAL POPULATION WITHIN 15 KM
CNT 5K = NUMBER OF SYSTEMS WITHIN 5 KM
POP 5K = POPULATION SERVED WITHIN 5 KM
CNT 10K = NUMBER OF SYSTEMS WITHIN 10 KM
POP 10K = POPULATION SERVED WITHIN 10 KM
CNT_TOT = NUMBER OF WATER SYSTEMS WITHIN 15KM
POP_TOT = POPULATION SERVED WITHIN 15 KM
STATUS = BUC & ASSOCIATES DESIGNATED ECOLOGICAL STATUS
-# = NUMBER OF SPECIAL CONCERN OR ENDANGERED/THREATENED
SPECIES PRESENT
DRASTIC = DRASTIC SUBREGION CODE

NAME	STATE	LATT	LONG	COMMODITY	TOT O_1	TOT TO SK	TOT TO ICK	TOTAL
BARBOUR COUNTY MINES PIT 2	AL	314310	851412	ALUMINUM	0	876	1607	6468
ARKANSAS OPERATIONS MINE	AR	343319	923201	ALUMINUM	316	11814	34425	47914
GUAPAW BAUXITE MINE	AR	343442	922957	ALUMINUM	0	5302	31156	71590
WILSON SPRINGS VANADIUM DEPOSIT.	AR	342830	925730	VANADIUM	674	4886	29148	51837
ASH PEAK	AZ	324549	1091527	SILVER	0	0	0	9
COPPER HILL	AZ	332530	1104618	COPPER	0	9246	15019	18681
COPPER QUEEN UG LEACHING	AZ	312618	1095334	GOLD	0	5395	8837	9278
CYPRUS BAGDAD COPPER	AZ	343501	1131223	COPPER	0	2331	2331	2331
EISENHOWER	AZ	320019	1110415	COPPER	0	0	2677	11297
ESPERANZA	AZ	315217	1110737	COPPER	0	1157	2943	11553
GOLD HILL MINE	AZ	323518	1105010	COPPER	0	62	2585	4492
INSPIRATION	AZ	332430	1105310	COPPER	0	5078	10990	19046
JOHNSON PIT	AZ	320600	1102425	COPPER	0	518	518	518
LAKESHORE	AZ	323100	1115400	COPPER	0	0	198	270
MIAMI MINE LEACHING OPERATION	AZ	332423	1105150	COPPER	834	6349	13583	19046
MISSION MINE	AZ	315936	1110341	COPPER	0	465	2677	14224
MORENCI-METCALF	AZ	330521	1092111	COPPER	0	1989	8095	8095
NEW CORNELIA MINE	AZ	322114	1125204	GOLD	478	5189	5284	5518
OX HIDE	AZ	332315	1105520	COPPER	0	546	5093	13933
PALO VERDE	AZ	315955	1110400	COPPER	0	0	2677	9002
PINTO VALLEY	AZ	332430	1105750	COPPER	0	0	3066	7474
RAY	AZ	331020	1105940	COPPER	0	120	120	1515
RED CLOUD MINE	AZ	330600	1143555	LEAD	0	0	379	1477
REYMERT PROPERTY	AZ	333212	1111205	SILVER	0	0	0	0
SACATON	AZ	325721	1114847	COPPER	0	1826	11898	21112
SAFFORD PHELPS DODGE	AZ	325741	1094024	COPPER	0	369	369	5781
SAN MANUEL COPPER MINE	AZ	324146	1104121	COPPER	0	0	2192	11243
SAN XAVIER UNIT OPEN PIT	AZ	320137	1110448	COPPER	0	0	1369	22485
SIERRITA	AZ	315217	1110953	COPPER	0	1157	2943	7469
SILVER BELL	AZ	322337	1113003	COPPER	0	0	1241	1246
TIGER TAILINGS DUMP	AZ	324240	1103742	GOLD	0	1906	2811	8540
TWIN BUTTES	AZ	315429	1112300	COPPER	0	1786	10256	11680
TYRO MINE	AZ	351337	1142703	GOLD	0	0	0	470
ANDREW TUNGSTEN MINE	CA	341523	1174100	TUNGSTEN	0	0	314	35109
BEAUREGARD	CA	373708	1190001	GOLD	0	2488	4117	4117
BRUSH CREEK MINE	CA	393046	1205317	GOLD	0	312	433	837
COPPEROPOLIS QUARRY	CA	375613	1203242	ASBESTOS	0	0	2514	10961
EAGLE MOUNTAIN MINE	CA	335359	1152911	IRON	0	0	2834	2834
GLEN OLIVE	CA	353228	1182624	GOLD	0	0	527	6298
GREY EAGLE	CA	415146	1232218	GOLD	0	0	1402	1733
KEYSTONE	CA	372124	1181445	GOLD	0	0	83	3910
MOUNTAIN COPPER MINE	CA	403234	1222448	GOLD	0	22191	57388	78424
PICACHO GOLD MINE	CA	325744	1143837	GOLD	0	0	0	64
PINE CREEK MINE	CA	372142	1184212	TUNGSTEN	0	0	924	924
SANTA RITA ASBESTOS	CA	362020	1203651	ASBESTOS	0	0	0	0
STRAWBERRY MINE	CA	373259	1191727	TUNGSTEN	0	0	0	0
WEST SHASTA DISTRICT	CA	404517	1222357	COPPER	7	14	3977	14839
BACHELOR GROUP MINE	CO	380338	1073938	SILVER	0	853	853	1518
BLACK CLOUD MINE	CO	391331	1061323	LEAD	0	0	6871	7487
BONANZA	CO	383925	1090336	URANIUM	0	0	0	38
BREEZY	CO	380725	1084930	URANIUM	0	0	0	933
BULLDOG	CO	375133	1065617	SILVER	0	677	677	677
BURRO MINE	CO	380248	1085322	URANIUM	0	311	311	311
CENTENNIAL MINE	CO	380136	1084106	URANIUM	0	0	19	19
CHILI 6	CO	380725	1084922	URANIUM	0	0	0	222
CLIMAX CONCENTRATOR	CO	392250	1061135	MOLYBDENUM	0	0	490	1905

NAME	STATE	LATT	LONG	COMMODITY	TOT 0_1	TOT TO 5K	TOT TO 10K	TOTAL
CLIMAX MILL	CO	392229	1061047	MOLYBDENUM	0	0	690	2037
CLIMAX MINE	CO	392209	1061017	MOLYBDENUM	0	0	690	1861
CLIMAX SURFACE MINE (OPEN PIT)	CO	392213	1061004	MOLYBDENUM	0	0	690	1861
DEREMO	CO	375617	1090105	URANIUM	0	0	0	311
EAGLE	CO	393143	1062343	ZINC	0	409	3143	5127
ELLISON	CO	380229	1085314	URANIUM	0	311	311	311
EVENING STAR MINE	CO	382333	1084506	URANIUM	0	510	1152	1152
FRANKLIN MINE	CO	393940	1055634	GOLD	0	0	1837	4264
GEO NO. 1	CO	381923	1085927	URANIUM	0	0	0	259
GOLDEN WONDER	CO	380017	1071648	GOLD	0	206	284	360
GREASY SPOON	CO	381901	1090141	URANIUM	0	0	0	339
HENDERSON	CO	394609	1055029	MOLYBDENUM	0	0	466	2336
HENDERSON WEST MILL	CO	395128	1060424	MOLYBDENUM	0	0	16	39
J. B. CRAWLEY MINES	CO	375508	1085627	URANIUM	0	0	0	311
KING SOLOMON	CO	382312	1084814	URANIUM	0	259	769	1152
KING #2	CO	375754	1085849	URANIUM	0	0	311	311
LEADVILLE UNIT MILL	CO	391332	1061255	LEAD	0	0	6871	7819
LONDON FAULT ADIT	CO	391623	1060847	URANIUM	0	0	822	8240
MAGPIE 2	CO	380725	1084822	URANIUM	0	0	0	222
MERRY WIDOW	CO	382029	1084341	URANIUM	0	510	893	1152
MESA NO. 5 (C-G-27)	CO	383629	1084846	URANIUM	0	0	0	314
MINERAL JOE GROUP	CO	381255	1084307	URANIUM	0	0	222	1034
MURIETTA	CO	380725	1084822	URANIUM	0	0	0	222
NEW VERDE	CO	383623	1085104	URANIUM	0	0	0	0
NIL-TRACE GROUP MINES	CO	381315	1084350	URANIUM	0	0	222	682
OCTOBER ADIT	CO	383734	1085911	URANIUM	0	0	0	0
OLD SETTLER MINE & TUNNEL	CO	394448	1053432	URANIUM	0	2557	4838	7160
PEANUT #2	CO	381123	1084624	URANIUM	0	222	222	222
PRAYER NO. 9	CO	381940	1090242	URANIUM	0	0	0	339
RAJAH 30	CO	383733	1090230	URANIUM	0	0	0	0
RAJAH 67+68, 61, 62, AND 63	CO	383831	1090321	URANIUM	0	0	0	0
SCHWARTZWALDER MINE	CO	395038	1051652	URANIUM	0	512	7833	61676
SHERMAN TUNNEL (MINE).	CO	391341	1061030	SILVER	0	0	1863	8240
SILVER BELL	CO	375848	1090534	URANIUM	0	0	128	128
STANDARD MILL	CO	375327	1073854	LEAD	0	5	799	1351
SUNBEAM GROUP	CO	382028	1084400	URANIUM	0	510	1152	1152
SUNDAY	CO	380419	1084815	URANIUM	0	0	0	311
SUNYSIDE MINE	CO	375326	1073848	LEAD	0	5	799	1351
TNT #2	CO	381845	1084523	URANIUM	0	0	769	1374
URA	CO	381242	1084504	URANIUM	0	222	222	222
URAVAN MINE	CO	382112	1084531	URANIUM	0	510	1152	1152
VAN	CO	381514	1084142	URANIUM	0	0	0	2578
VICTOR PROJECT	CO	384435	1050901	GOLD	0	928	1218	1324
BIG FOUR	FL	274438	820441	PHOSPHATE	0	0	0	6689
BONNY LAKE MINE	FL	275422	815512	PHOSPHATE	0	3526	47093	85647
C F HARDEE PHOSPHATE COMPLEX	FL	273502	815552	PHOSPHATE	0	754	2655	10444
CLEAR SPRINGS	FL	275111	814829	PHOSPHATE	0	4494	21749	43351
FORT GREEN MINE	FL	274035	820025	PHOSPHATE	0	0	466	2729
FORT MEADE MINE	FL	274720	814749	PHOSPHATE	0	6756	8251	26579
FORT MEADE MINE	FL	274113	815049	PHOSPHATE	0	0	10241	15241
FOUR CORNERS MINE	FL	274822	820244	PHOSPHATE	0	0	4997	15774
GREEN COVE SPRINGS MINERAL SANDS OP	FL	295200	814230	TITANIUM	0	887	1327	8077
HAYNSWORTH MINE	FL	274529	820030	PHOSPHATE	0	967	1975	5206
HOOKERS PRAIRIE MINE	FL	274652	813620	PHOSPHATE	0	1975	2429	18585
KINGSFORD MINE	FL	275032	813953	PHOSPHATE	0	1128	7175	26239
LITTLE PAYNE CREEK	FL	273725	815225	PHOSPHATE	0	745	6599	13472

NAME	STATE	LATT	LONG	COMMODITY	TOT 0_1	TOT TO 5K	TOT TO 10K	TOTAL
LONESOME MINE	FL	274428	820723	PHOSPHATE	0	0	619	5099
NICHOLS MINE	FL	275226	820054	PHOSPHATE	0	4765	19396	45832
NORALYN/PHOSPHORIA	FL	274930	815400	PHOSPHATE	0	111	13186	34440
ROCKLAND MINE	FL	274514	815201	PHOSPHATE	0	0	6183	17376
SADDLE CREEK- EBERSBACH	FL	280159	815002	PHOSPHATE	0	12303	69495	175207
SILVER CITY MINE	FL	274800	815411	PHOSPHATE	0	0	2540	30044
SUWANNEE RIVER MINE	FL	302613	824637	PHOSPHATE	0	0	991	1772
TRAIL RIDGE OPERATION	FL	295445	820153	TITANIUM	0	1536	8054	18160
WATSON MINE (SWIFT)	FL	274330	814640	PHOSPHATE	0	5548	8127	12151
WINDGATE CREEK MINE	FL	272819	820459	PHOSPHATE	0	0	0	1909
SUMTER COUNTY MINES	GA	321109	840457	ALUMINUM	0	89	1301	10123
AMAX MOLYBDENUM CO. CONVERSION PLT.	IA	403459	912521	MOLYBDENUM	0	3083	16424	26680
BIG BUFFALO	ID	453630	1154055	GOLD	0	0	0	23
BUNKER HILL MINE	ID	473212	1160830	LEAD	463	5411	9267	13893
CHAMP MINE	ID	424018	1111629	PHOSPHATE	0	0	0	0
CLAYTON SILVER MINE	ID	441651	1142437	SILVER	0	43	43	192
COEUR MINE	ID	472919	1155908	SILVER	0	4488	5429	12869
CONDA MINE	ID	424342	1113136	PHOSPHATE	0	188	1849	4723
CRESCENT MINE	ID	473017	1160424	SILVER	0	2409	9841	13850
DE LAMAR SILVER MINE	ID	430049	1164937	SILVER	0	0	0	161
GALENA MINE AND MILL	ID	472839	1155758	SILVER	0	3613	5429	12369
GAY MINE	ID	430257	1120720	PHOSPHATE	0	0	0	277
HENRY MINE	ID	425205	1112740	PHOSPHATE	0	0	53	326
LANES CREEK PHOSPHATE PROPERTY	ID	425038	1111958	PHOSPHATE	0	42	42	127
LUCKY FRIDAY	ID	472816	1154649	SILVER	0	1517	2226	5435
MAYBE CANYON MINE	ID	424533	1111829	PHOSPHATE	0	0	0	207
SOUTH MOUNTAIN MINE	ID	424430	1165437	GOLD	0	0	0	95
STAR MINE NO. 1 MAIN VEIN	ID	472812	1154823	LEAD	609	1517	4032	6468
STAR-MORNING UNIT AREA	ID	473113	1154857	ZINC	709	709	3962	7235
SUNSHINE MINE AND MILL	ID	473004	1160406	SILVER	0	2409	9841	13850
THOMPSON CREEK MOLYBDENUM MINE	ID	441851	1143301	MOLYBDENUM	0	0	149	192
THOMPSON CREEK PROJECT	ID	442217	1143530	MOLYBDENUM	0	0	0	149
WEST END MINE	ID	445551	1151913	GOLD	0	0	0	0
WOOLEY VALLEY MINE	ID	424952	1112428	PHOSPHATE	0	42	42	241
YANKEE FORK PLACER	ID	442123	1144346	GOLD	0	0	0	0
ROSICLARE MINE	IL	372531	882054	SILVER	1441	2083	2881	6377
LEXINGTON QUARRY COMPANY	KY	375543	843343	ZINC	0	6303	49487	146446
AMAX SPECIALTY METALS-COLDWATER, MI	MI	415630	845954	MOLYBDENUM	630	13707	21189	27538
EMPIRE MINE	MI	462640	873550	IRON	0	1023	16069	22793
REPUBLIC MINE	MI	462338	875820	IRON	0	934	1776	4301
TILDEN MINE	MI	462650	873830	IRON	0	2650	18179	22847
BUTLER TACONITE MINE	MN	472242	931020	IRON	885	1419	5252	8600
CANISTEO PLANT	MN	471807	932605	IRON	0	1960	7815	21267
CONNIE MINE	MN	473250	923205	IRON	456	11046	21985	30286
DUNKA PIT (ERIE PIT NO 8)	MN	474220	915104	IRON	0	0	2847	2847
ERIE MINE	MN	473600	920830	IRON	0	980	5629	8546
HIBBING TACONITE MINE	MN	472739	925727	IRON	0	7813	24876	29366
MCKINLY MINE	MN	473124	922409	IRON	0	3535	10402	31254
MINNTAC MINE	MN	473400	923815	IRON	0	1023	13531	25295
MINORCA MINE	MN	473341	923115	IRON	0	5098	17948	28899
NATIONAL STEEL PELLET	MN	472500	925445	IRON	1939	17873	25709	30934
PETER MITCHELL MINE	MN	473919	915747	IRON	797	797	2435	4542
PLYMER MILL	MN	471847	932328	IRON	0	2164	7248	13740
RANA MINE	MN	473126	924438	IRON	0	2130	3973	21533
RESERVE PELLET PLANT	MN	473900	915830	IRON	0	797	2435	4542
SALNTRY MINE	MN	473230	923213	IRON	456	12175	23055	30761

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THE HANNA MINING CO AGEN	MN	472436	930311	IRON	0	2180	19329	26512
THUNDERBIRD NORTH	MN	472908	923333	IRON	0	17176	25843	29673
THUNDERBIRD SOUTH	MN	472637	923315	IRON	0	5733	23376	29022
BRUSHY CREEK DIVISION	MO	373218	910744	LEAD	0	0	1092	2493
BUICK MINE	MO	373621	910721	LEAD	0	0	785	3945
FLETCHER DIVISION	MO	372759	910634	LEAD	0	1092	1765	2006
MADISON MINE	MO	373259	901620	COBALT	0	6272	7366	8489
MAGMONT MINE	MO	373821	910721	LEAD	0	0	2125	2125
PEA RIDGE MINE	MO	380736	910247	IRON	0	496	496	3481
PILOT KNOB PLANT	MO	373714	903757	IRON	2	3775	6263	8045
ST. JOE IRON MINE	MO	380734	910008	IRON	0	496	496	1867
VIBURNUM	MO	374257	910654	LEAD	0	836	1621	3758
WEST FORK DEPOSIT	MO	372933	910632	LEAD	1092	1092	1547	2734
BI-METALLIC	MT	460055	1121220	GOLD	0	90	90	398
BLACK PINE MINE AND PLANT	MT	462452	1132156	SILVER	0	0	0	1138
COMET MINE	MT	452727	1130256	SILVER	0	0	24	86
CRYSTAL MINE	MT	462101	1121540	GOLD	0	252	252	252
GOLDEN SUNLIGHT MINE AND PLANT	MT	455422	1120050	GOLD	0	0	1338	1338
GRAY EAGLE	MT	461848	1121152	LEAD	0	0	926	1693
LITTLE GIANT MINE & MILL	MT	461225	1114335	GOLD	0	0	0	0
RUBY GULCH	MT	475553	1083321	GOLD	0	0	2	636
TROY PROJECT	MT	481346	1155413	SILVER	0	0	0	0
UNCLE SAM MINE	MT	452934	1115929	GOLD	0	0	403	403
WARM SPRINGS CREEK MINE	MT	463623	1124648	PHOSPHATE	0	220	220	220
ZORTMAN-LANDUSKY MINE AND PLANTS	MT	475654	1083251	GOLD	0	0	76	645
LEE CREEK MINE	NC	352303	764737	PHOSPHATE	0	0	2657	6982
STERLING MINE	NJ	410502	743623	ZINC	777	10143	32636	86152
BLACK COLT	NM	325605	1074310	SILVER	0	0	0	422
CENTER MINE	NM	335101	1085730	GOLD	0	0	0	419
CHINO	NM	324730	1080400	COPPER	0	0	6585	8974
CHURCH ROCK MINE	NM	353720	1083540	URANIUM	0	924	2049	8581
CONTINENTAL MILL NO 1	NM	325115	1080506	COPPER	0	581	1581	6585
GREAT REPUBLIC	NM	332832	1074443	GOLD	0	0	0	150
JACKPILE PAGUATE URANIUM PIT	NM	352305	1071955	URANIUM	0	0	8	8
KERR MCGEE SEC 17 MINE	NM	352622	1074903	URANIUM	0	0	28	227
KERR MCGEE SEC 19 MINE	NM	352531	1074927	URANIUM	0	0	152	708
KERR MCGEE SEC 24 MINE	NM	352510	1075109	URANIUM	0	0	156	708
KERR MCGEE SEC 29	NM	352507	1074830	URANIUM	0	28	152	156
KERR MCGEE SEC 30 MINE	NM	352454	1074927	URANIUM	0	0	152	708
KERR MCGEE SEC 33 MINE	NM	352410	1074735	URANIUM	0	28	152	156
KERR MCGEE SEC 35 MINE	NM	352409	1074543	URANIUM	28	28	28	152
KERR-MCGEE CONCENTRATOR	NM	352305	1075010	URANIUM	0	0	152	1603
ORTIZ OPEN PIT GOLD MINE	NM	352019	1060808	GOLD	0	814	814	814
QUESTA MOLYBDENUM MINE	NM	364150	1052931	MOLYBDENUM	0	0	1534	2080
SECTION 23 MINE	NM	352547	1075219	URANIUM	0	0	156	846
ST CLOUD	NM	331915	1074212	SILVER	0	0	0	150
TYRONE	NM	323810	1082221	COPPER	0	0	1029	1074
WASHINGTON MINE	NM	354509	1062814	GOLD	0	675	675	874
ALLIGATOR RIDGE PROPERTY	NV	394824	1163112	GOLD	0	0	0	0
ATLANTA MINE & MILL	NV	382757	1141918	GOLD	0	0	0	0
BELL MOUNTAIN	NV	391045	1180759	SILVER	0	0	0	0
BOREALIS MINE AND PLANT	NV	382257	1184536	GOLD	0	0	0	8
BROKEN HILLS MINE	NV	390312	1180015	SILVER	0	0	0	0
BULLION MONARCH MINE & MILL	NV	403503	1162307	GOLD	0	0	0	0
CANDELARIA PARTNERS MINE AND PLANT	NV	380932	1180511	SILVER	0	0	0	370
CARLIN GOLD MINING CO.	NV	405451	1165908	GOLD	0	0	0	0

NAME	STATE	LATT	LONG	COMMODITY	TOT 0_1	TOT TO 5K	TOT TO 10K	TOTAL
CARLIN PIT	NV	405441	1161913	GOLD	0	0	0	0
COPPER CANYON MINE PLACER	NV	403104	1170813	GOLD	0	0	0	420
CORTEZ GOLD MINES REFINERY/MILL	NV	400829	1163559	GOLD	0	0	0	4
ENFIELD B. BELL MINE	NV	412344	1155939	GOLD	0	0	0	139
EUREKA-HAMBURG MINE & MILL	NV	392955	1155902	SILVER	0	0	469	469
FIRE CREEK MINE	NV	402723	1163820	GOLD	0	0	147	147
GOLDSTRIKE	NV	405812	1162155	GOLD	0	0	0	0
IRON MINE - ART WILSON COMPANY	NV	395844	1181639	IRON	0	0	0	457
MANHATTAN MILL	NV	383208	1170356	GOLD	0	0	0	0
MCDERMITT MINE	NV	415513	1174837	MERCURY	0	0	175	574
NEVADA MOLY PROJECT	NV	381919	1171808	MOLYBDENUM	0	0	0	0
NEVADA PACKARD	NV	401520	1181022	SILVER	0	0	32	32
NEW SAVAGE MINE	NV	391836	1193639	GOLD	0	0	832	6847
NORTHUMBERLAND	NV	385811	1165247	GOLD	0	0	0	0
PINSON MINE & MILL	NV	410833	1171500	GOLD	0	0	202	202
SIXTEEN-TO-ONE	NV	374256	1174702	SILVER	0	0	55	55
SMOKY VALLEY MINE AND PLANT	NV	384230	1170500	GOLD	0	0	0	0
STERLING MINE	NV	364922	1163815	GOLD	0	185	185	1523
TAYLOR MINE	NV	390441	1144055	SILVER	0	0	0	67
TONOPAH DIVIDE	NV	375942	1171517	GOLD	0	0	1952	1952
WELLS TUNGSTEN MINE	NV	410154	1150038	TUNGSTEN	0	0	1218	1218
WINDFALL MINE AND MILL	NV	392715	1155842	GOLD	0	0	469	469
BALMAT MINES	NY	441546	752437	ZINC	0	1782	3795	8566
MACINTYRE DEVELOPMENT	NY	440304	740303	TITANIUM	0	0	0	3388
PIERREPONT	NY	443232	750045	ZINC	0	1805	4796	25856
GREENBACK MINE	OR	423912	1231821	GOLD	0	0	2271	7560
NICKEL MOUNTAIN MINE	OR	425750	1232632	NICKEL	0	0	4447	11370
CLIMAX MOLYBEDENUM--LANGLOTH, PA.	PA	402150	802403	MOLYBDENUM	1112	6051	16328	46330
GTE PRDTS CORP--TOWANDA PLANT	PA	414607	762641	COBALT	3526	7063	10881	15634
BLACK HILLS TIN COMPANY	SD	442246	1040305	TIN	0	0	0	196
HOMESTAKE MINE YATES SHAFT	SD	442108	1034500	GOLD	1470	6597	6944	9435
ASARCO NEW MARKET MINE	TN	360438	833355	ZINC	0	1495	16987	30104
BEAVER CREEK	TN	360432	833818	ZINC	1839	3513	12146	34237
COY	TN	360720	832920	ZINC	4370	9174	16262	33370
EUREKA MINE	TN	350156	842157	COPPER	0	2102	4308	9049
GORDONSVILLE-ELMWOOD MINE	TN	361149	855604	ZINC	0	2987	8552	13821
IMMEL	TN	360401	834227	ZINC	0	1850	19020	40611
YOUNG	TN	360435	833647	ZINC	0	3513	8170	34638
HUDSON PIT & PLANT	TX	315140	951252	IRON	0	0	7195	22503
LONE STAR DEPOSITS	TX	325700	944030	IRON	0	2036	7229	15743
LONE STAR IRON MINE & CONCENTRATOR	TX	325350	944500	IRON	0	0	4744	11142
PANNA MARIA MINE	TX	285817	975621	URANIUM	0	0	3617	8501
SIDERITE MINE & MILL	TX	324832	1063334	IRON	0	0	0	0
BEAVER MINE (DEER CREEK)	UT	381905	1091417	URANIUM	0	0	0	505
BINGHAM OPEN PIT	UT	403115	1120842	COPPER	0	427	1686	21156
BINGHAM PIT - LEAD + ZINC DEPOSIT	UT	403115	1120842	LEAD	0	427	1686	21156
ESCALANTE	UT	374127	1134311	SILVER	0	0	0	1107
IRON BLOSSOM MINE	UT	393603	1130415	IRON	0	0	0	0
LISBON MINE-RIO ALGOM	UT	381557	1091710	URANIUM	0	0	0	357
MERCUR MINING DISTRICT	UT	401842	1121251	GOLD	0	0	42	371
MIVIDA MINE	UT	381130	1091521	URANIUM	0	18	18	357
PANDORA MINE	UT	381832	1091716	URANIUM	0	0	339	505
RIM SHAFT	UT	380359	1091221	URANIUM	0	0	0	146
TOPAZ PROPERTIES OF BRUSH-WELLMAN	UT	394224	1131302	BERYLLIUM	0	0	0	0
TRIXIE MINE	UT	395325	1120027	GOLD	0	0	0	1740
VELVET SHAFT	UT	380734	1091016	URANIUM	0	0	18	357

NAME	STATE	LATT	LONG	COMMODITY	TOT 0_1	TOT TO 5K	TOT TO 10K	TOTAL
VERNAL MINE	UT	403605	1092925	PHOSPHATE	0	0	963	963
VIPONT MINE	UT	415752	1135105	SILVER	0	0	0	0
LOWELL MINE	VT	444600	723130	ASBESTOS	0	612	1185	2676
KNOBHILL MINES	WA	484056	1184509	GOLD	0	1018	1961	1961
MIDNITE MINE	WA	475715	1180525	URANIUM	0	121	121	623
SHERWOOD MINE	WA	475245	1180704	URANIUM	0	0	405	731
BEAR CREEK PROJECT	WY	431531	1053714	URANIUM	0	0	0	59
BIG EAGLE MINE	WY	421910	1074728	URANIUM	0	0	0	489
GAS HILLS OPERATION	WY	432035	1073126	URANIUM	0	0	112	112
GAS HILLS PROJECT	WY	424931	1073706	URANIUM	0	0	0	451
LUCKY MC MINE	WY	425920	1073522	URANIUM	0	13	13	13
SHIRLEY BASIN MINE	WY	421700	1061200	URANIUM	0	633	633	633

NAME	STATE	CNT 5K	POP 5K	CNT 10K	POP 10K	CNT_TOT	POP_TOT	STATUS	#
BARBOUR COUNTY MINES PIT 2	AL	0	0	1	3777	1	3777	4	
ARKANSAS OPERATIONS MINE	AR	4	1025	5	3725	6	4485	2	4
QUAPAW BAUXITE MINE	AR	1	2700	6	4485	10	12338	2	1
WILSON SPRINGS VANADIUM DEPOSIT.	AR	0	0	7	1210	7	1210	1	
ASH PEAK	AZ	0	0	0	0	0	0	2	
COPPER HILL	AZ	13	10987	17	11315	17	11315	1	
COPPER QUEEN UG LEACHING	AZ	2	12450	2	12450	4	13340	3	2
CYPRUS BAGDAD COPPER	AZ	2	530	2	530	2	530	3	1
EISENHOWER	AZ	0	0	0	0	8	13120	1	
ESPERANZA	AZ	0	0	0	0	3	11825	3	1
GOLD HILL MINE	AZ	0	0	0	0	2	261	4	
INSPIRATION	AZ	4	328	17	11315	17	11315	1	
JOHNSON PIT	AZ	0	0	0	0	1	152	2	4
LAKESHORE	AZ	0	0	0	0	0	0	2	
MIAMI MINE LEACHING OPERATION	AZ	4	328	17	11315	17	11315	1	
MISSION MINE	AZ	0	0	0	0	8	13120	1	
MORENCI-METCALF	AZ	2	10000	3	10410	3	10410	3	1
NEW CORNELIA MINE	AZ	2	3075	2	3075	2	3075	3	1
OX HIDE	AZ	0	0	4	328	17	11315	2	1
PALO VERDE	AZ	0	0	0	0	8	13120	4	
PINTO VALLEY	AZ	0	0	0	0	4	328	4	
RAY	AZ	0	0	0	0	0	0	4	
RED CLOUD MINE	AZ	0	0	0	0	0	0	1	
REYMERT PROPERTY	AZ	0	0	0	0	0	0	1	
SACATON	AZ	0	0	0	0	19	10076	1	
SAFFORD PHELPS DODGE	AZ	0	0	0	0	0	0	1	
SAN MANUEL COPPER MINE	AZ	0	0	3	1366	4	2466	3	2
SAN XAVIER UNIT OPEN PIT	AZ	0	0	0	0	24	4369	2	2
SIERRITA	AZ	0	0	0	0	0	0	3	1
SILVER BELL	AZ	0	0	0	0	0	0	3	1
TIGER TAILINGS DUMP	AZ	3	1366	3	1366	4	2466	3	1
TWIN BUTTES	AZ	0	0	3	11825	8	13120	3	1
TYRO MINE	AZ	0	0	0	0	11	3429	2	1
ANDREW TUNGSTEN MINE	CA	0	0	0	0	0	0	3	1
BEAUREGARD	CA	0	0	0	0	0	0	3	4
BRUSH CREEK MINE	CA	0	0	0	0	0	0	4	
COPPEROPOLIS QUARRY	CA	0	0	0	0	0	0	3	3
EAGLE MOUNTAIN MINE	CA	0	0	0	0	0	0	3	1
GLEN OLIVE	CA	0	0	0	0	0	0	3	3
GREY EAGLE	CA	0	0	0	0	0	0	3	1
KEYSTONE	CA	0	0	0	0	0	0	3	5
MOUNTAIN COPPER MINE	CA	1	40	1	40	1	40	4	
PICACHO GOLD MINE	CA	0	0	0	0	0	0	1	
PINE CREEK MINE	CA	0	0	0	0	0	0	3	3
SANTA RITA ASBESTOS	CA	0	0	0	0	0	0	3	1
STRAWBERRY MINE	CA	0	0	0	0	0	0	1	
WEST SHASTA DISTRICT	CA	0	0	0	0	0	0	3	1
BACHELOR GROUP MINE	CO	1	750	1	750	4	870	1	
BLACK CLOUD MINE	CO	0	0	9	5961	9	5961	3	2
BONANZA	CO	0	0	2	70	2	70	3	1
BREEZY	CO	0	0	0	0	1	25	1	
BULLDOG	CO	1	740	1	740	1	740	1	
BURRO MINE	CO	1	25	1	25	1	25	3	1
CENTENNIAL MINE	CO	0	0	0	0	0	0	1	
CHILL S	CO	0	0	0	0	1	25	1	
CLIMAX CONCENTRATOR	CO	0	0	0	0	0	0	3	1

NAME	STATE	CNT 5K	POP 5K	CNT 10K	POP 10K	CNT_TOT	POP_TOT	STATUS	#
CLIMAX MILL	CO	0	0	0	0	0	0	1	
CLIMAX MINE	CO	0	0	0	0	0	0	2	2
CLIMAX SURFACE MINE (OPEN PIT)	CO	0	0	0	0	0	0	1	
DEREMO	CO	0	0	0	0	0	0	1	
EAGLE	CO	0	0	0	0	7	5525	1	
ELLISON	CO	1	25	1	25	1	25	3	1
EVENING STAR MINE	CO	1	600	1	600	1	600	3	1
FRANKLIN MINE	CO	0	0	0	0	10	10416	1	
GEO NO. 1	CO	1	150	1	150	1	150	1	
GOLDEN WONDER	CO	1	280	1	280	1	280	1	
GREASY SPOON	CO	0	0	1	150	1	150	3	1
HENDERSON	CO	0	0	0	0	1	540	4	
HENDERSON WEST MILL	CO	0	0	0	0	0	0	1	
J. B. CRAWLEY MINES	CO	0	0	0	0	1	25	1	
KING SOLOMON	CO	0	0	1	600	2	750	3	1
KING #2	CO	0	0	0	0	1	25	1	
LEADVILLE UNIT MILL	CO	0	0	9	5961	9	5961	3	1
LONDON FAULT ADIT	CO	0	0	0	0	9	5961	3	2
MAGPIE 2	CO	0	0	0	0	1	25	1	
MERRY WIDOW	CO	1	600	1	600	1	600	2	1
MESA NO. 5 (C-G-27)	CO	0	0	0	0	2	70	1	
MINERAL JOE GROUP	CO	0	0	0	0	1	50	1	
MURIETTA	CO	0	0	0	0	1	25	1	
NEW VERDE	CO	0	0	0	0	2	70	1	
NIL-TRACE GROUP MINES	CO	0	0	0	0	0	0	1	
OCTOBER ADIT	CO	2	70	2	70	2	70	3	2
OLD SETTLER MINE & TUNNEL	CO	2	175	7	741	7	741	1	
PEANUT #2	CO	0	0	0	0	0	0	1	
PRAYER NO. 9	CO	0	0	1	150	1	150	3	1
RAJAH 30	CO	0	0	2	70	2	70	3	1
RAJAH 67+68, 61, 62, AND 63	CO	0	0	2	70	2	70	3	1
SCHWARTZWALDER MINE	CO	0	0	0	0	3	325	1	
SHERMAN TUNNEL (MINE).	CO	0	0	9	5961	9	5961	3	2
SILVER BELL	CO	0	0	0	0	0	0	1	
STANDARD MILL	CO	0	0	0	0	4	1098	4	
SUNBEAM GROUP	CO	1	600	1	600	1	600	3	2
SUNDAY	CO	0	0	1	25	1	25	1	
SUNYSIDE MINE	CO	0	0	0	0	4	1098	1	
TNT #2	CO	0	0	1	600	1	600	3	2
URA	CO	0	0	0	0	0	0	1	
URAVAN MINE	CO	1	600	1	600	1	600	1	
VAN	CO	0	0	0	0	2	650	3	1
VICTOR PROJECT	CO	1	600	1	600	1	600	1	
BIG FOUR	FL	0	0	0	0	0	0	3	1
BONNY LAKE MINE	FL	0	0	0	0	0	0	3	1
C F HARDEE PHOSPHATE COMPLEX	FL	0	0	0	0	0	0	1	
CLEAR SPRINGS	FL	0	0	0	0	0	0	3	1
FORT GREEN MINE	FL	0	0	0	0	0	0	3	2
FORT MEADE MINE	FL	0	0	0	0	0	0	3	1
FORT MEADE MINE	FL	0	0	0	0	0	0	3	1
FOUR CORNERS MINE	FL	0	0	0	0	0	0	2	4
GREEN COVE SPRINGS MINERAL SANDS OP	FL	0	0	0	0	0	0	1	
HAYNSWORTH MINE	FL	0	0	0	0	0	0	3	1
HOOKERS PRAIRIE MINE	FL	0	0	0	0	0	0	1	
KINGSFORD MINE	FL	0	0	0	0	0	0	3	2
LITTLE PAYNE CREEK	FL	0	0	0	0	0	0	1	

NAME	STATE	CNT 5K	POP 5K	CNT 10K	POP 10K	CNT_TOT	POP_TOT	STATUS	#
LONESOME MINE	FL	0	0	0	0	0	0	3	2
NICHOLS MINE	FL	0	0	0	0	0	0	3	1
NORALYN/PHOSPHORIA	FL	0	0	0	0	0	0	1	
ROCKLAND MINE	FL	0	0	0	0	0	0	3	1
SADDLE CREEK- EBERSBACH	FL	0	0	0	0	0	0	3	1
SILVER CITY MINE	FL	0	0	0	0	0	0	1	
SUWANNEE RIVER MINE	FL	0	0	0	0	0	0	3	1
TRAIL RIDGE OPERATION	FL	0	0	0	0	0	0	3	1
WATSON MINE (SWIFT)	FL	0	0	0	0	0	0	3	1
WINDGATE CREEK MINE	FL	0	0	0	0	0	0	2	2
SUMTER COUNTY MINES	GA	1	300	1	300	3	5976	4	
AMAX MOLYBDENUM CO. CONVERSION PLT.	IA	0	0	9	2942	12	5222	3	7
BIG BUFFALO	ID	0	0	0	0	0	0	3	1
BUNKER HILL MINE	ID	1	66	2	866	7	2053	4	
CHAMP MINE	ID	0	0	0	0	0	0	1	
CLAYTON SILVER MINE	ID	3	235	3	235	3	235	3	1
COEUR MINE	ID	3	287	6	662	7	728	1	
CONDA MINE	ID	0	0	0	0	3	4291	1	
CRESCENT MINE	ID	1	66	4	353	7	728	1	
DE LAMAR SILVER MINE	ID	0	0	0	0	0	0	1	
GALENA MINE AND MILL	ID	6	662	6	662	7	728	1	
GAY MINE	ID	0	0	0	0	0	0	1	
HENRY MINE	ID	0	0	0	0	0	0	1	
LANES CREEK PHOSPHATE PROPERTY	ID	0	0	0	0	0	0	1	
LUCKY FRIDAY	ID	0	0	0	0	3	375	2	1
MAYBE CANYON MINE	ID	0	0	0	0	0	0	1	
SOUTH MOUNTAIN MINE	ID	0	0	0	0	0	0	3	1
STAR MINE NO. 1 MAIN VEIN	ID	0	0	3	375	6	662	1	
STAR-MORNING UNIT AREA	ID	0	0	3	375	6	662	1	
SUNSHINE MINE AND MILL	ID	0	0	4	353	7	728	1	
THOMPSON CREEK MOLYBDENUM MINE	ID	0	0	0	0	0	0	1	
THOMPSON CREEK PROJECT	ID	0	0	0	0	0	0	3	1
WEST END MINE	ID	0	0	0	0	0	0	3	1
WOOLEY VALLEY MINE	ID	0	0	0	0	0	0	1	
YANKEE FORK PLACER	ID	0	0	0	0	0	0	3	1
ROSICLARE MINE	IL	1	500	1	500	1	500	4	
LEXINGTON QUARRY COMPANY	KY	0	0	1	32	1	32	1	
AMAX SPECIALTY METALS-COLDWATER, MI	MI	10	11671	11	13240	11	13240	1	
EMPIRE MINE	MI	1	750	6	3977	6	3977	1	
REPUBLIC MINE	MI	1	900	1	900	3	1137	2	1
TILDEN MINE	MI	5	3577	6	3977	6	3977	1	
BUTLER TACONITE MINE	MN	1	1382	3	3354	4	4124	2	1
CANISTEO PLANT	MN	2	2067	14	10222	17	11532	2	5
CONNIE MINE	MN	3	15263	6	18211	10	23675	2	1
DUNKA PIT (ERIE PIT NO 8)	MN	1	2480	1	2480	1	2480	2	2
ERIE MINE	MN	0	0	2	45	4	2805	1	
HIBBING TACONITE MINE	MN	0	0	3	26050	5	28792	2	2
MCKINLY MINE	MN	2	1810	6	19436	8	22396	2	1
MINNTAC MINE	MN	0	0	7	19302	8	20387	2	2
MINORCA MINE	MN	1	813	6	18211	9	20021	2	1
NATIONAL STEEL PELLET	MN	2	20050	3	26050	5	28792	2	1
PETER MITCHELL MINE	MN	0	0	1	2480	1	2480	1	
PLUMMER MILL	MN	2	1210	5	3704	16	11307	2	1
RANA MINE	MN	3	4939	5	5324	6	11324	1	
RESERVE PELLET PLANT	MN	0	0	1	2480	1	2480	1	
SALNTRY MINE	MN	3	15263	6	18211	10	23675	2	1

NAME	STATE	CNT 5K	POP 5K	CNT 10K	POP 10K	CNT_TOT	POP_TOT	STATUS	#
THE HANNA MINING CO AGEN	MN	1	1457	4	22989	4	22889	1	
THUNDERBIRD NORTH	MN	2	14750	7	18301	10	22315	2	1
THUNDERBIRD SOUTH	MN	0	0	6	17788	10	22315	1	
BRUSHY CREEK DIVISION	MO	0	0	0	0	2	689	2	2
BUICK MINE	MO	1	10	1	10	2	846	1	
FLETCHER DIVISION	MO	0	0	1	679	3	994	2	1
MADISON MINE	MO	1	60	1	60	1	60	2	1
MAGMONT MINE	MO	1	10	2	846	2	846	3	1
PEA RIDGE MINE	MO	0	0	0	0	5	6833	3	1
PILOT KNOB PLANT	MO	3	308	3	308	4	428	3	3
ST. JOE IRON MINE	MO	0	0	0	0	0	0	3	1
VIBURNUM	MO	1	836	2	846	2	846	1	
WEST FORK DEPOSIT	MO	0	0	1	679	1	679	3	1
BI-METALLIC	MT	0	0	0	0	0	0	1	
BLACK PINE MINE AND PLANT	MT	0	0	0	0	0	0	1	
COMET MINE	MT	0	0	0	0	1	30	1	
CRYSTAL MINE	MT	0	0	1	350	1	350	1	
GOLDEN SUNLIGHT MINE AND PLANT	MT	0	0	1	1035	1	1035	1	
GRAY EAGLE	MT	0	0	1	350	4	2861	1	
LITTLE GIANT MINE & MILL	MT	0	0	0	0	0	0	1	
RUBY GULCH	MT	2	42	2	42	3	290	1	
TROY PROJECT	MT	0	0	0	0	0	0	3	2
UNCLE SAM MINE	MT	0	0	0	0	0	0	1	
WARM SPRINGS CREEK MINE	MT	0	0	0	0	1	70	1	
ZORTMAN-LANDUSKY MINE AND PLANTS	MT	2	42	2	42	3	290	3	2
LEE CREEK MINE	NC	0	0	2	1150	3	1280	1	
STERLING MINE	NJ	2	3400	18	18802	30	23400	3	46
BLACK COLT	NM	0	0	0	0	1	100	1	
CENTER MINE	NM	0	0	0	0	0	0	1	
CHINO	NM	1	200	5	6448	8	8138	3	7
CHURCH ROCK MINE	NM	0	0	0	0	2	930	1	
CONTINENTAL MILL NO 1	NM	0	0	1	200	7	6547	3	1
GREAT REPUBLIC	NM	0	0	0	0	0	0	1	
JACKPILE PAGUATE URANIUM PIT	NM	0	0	0	0	0	0	1	
KERR MCGEE SEC 17 MINE	NM	0	0	0	0	0	0	1	
KERR MCGEE SEC 19 MINE	NM	0	0	0	0	0	0	1	
KERR MCGEE SEC 24 MINE	NM	0	0	0	0	0	0	1	
KERR MCGEE SEC 29	NM	0	0	0	0	0	0	1	
KERR MCGEE SEC 30 MINE	NM	0	0	0	0	0	0	1	
KERR MCGEE SEC 33 MINE	NM	0	0	0	0	0	0	1	
KERR MCGEE SEC 35 MINE	NM	0	0	0	0	0	0	1	
KERR-MCGEE CONCENTRATOR	NM	0	0	0	0	0	0	1	
ORTIZ OPEN PIT GOLD MINE	NM	0	0	0	0	1	210	1	
QUESTA MOLYBDENUM MINE	NM	0	0	2	5306	5	5510	2	6
SECTION 23 MINE	NM	0	0	0	0	0	0	2	
ST CLOUD	NM	0	0	0	0	0	0	1	
TYRONE	NM	0	0	0	0	0	0	3	7
WASHINGTON MINE	NM	0	0	0	0	0	0	2	5
ALLIGATOR RIDGE PROPERTY	NV	0	0	0	0	0	0	1	
ATLANTA MINE & MILL	NV	0	0	0	0	0	0	2	1
BELL MOUNTAIN	NV	0	0	0	0	0	0	1	
BOREALIS MINE AND PLANT	NV	0	0	0	0	0	0	2	1
BROKEN HILLS MINE	NV	0	0	0	0	0	0	1	
BULLION MONARCH MINE & MILL	NV	0	0	0	0	0	0	1	
CANDELARIA PARTNERS MINE AND PLANT	NV	0	0	0	0	0	0	2	3
CARLIN GOLD MINING CO.	NV	0	0	0	0	0	0	1	

NAME	STATE	CNT 5K	POP 5K	CNT 10K	POP 10K	CNT_TOT	POP_TOT	STATUS	#
CARLIN PIT	NV	0	0	0	0	0	0	1	
COPPER CANYON MINE PLACER	NV	0	0	0	0	0	0	1	
CORTEZ GOLD MINES REFINERY/MILL	NV	0	0	0	0	0	0	1	
ENFIELD B. BELL MINE	NV	0	0	0	0	0	0	3	2
EUREKA-HAMBURG MINE & MILL	NV	1	450	1	450	1	450	2	1
FIRE CREEK MINE	NV	0	0	0	0	0	0	1	
GOLDSTRIKE	NV	0	0	0	0	0	0	1	
IRON MINE - ART WILSON COMPANY	NV	0	0	0	0	0	0	1	
MANHATTAN MILL	NV	1	180	1	180	1	180	3	2
MCDERMITT MINE	NV	0	0	1	215	1	215	3	1
NEVADA MOLY PROJECT	NV	0	0	0	0	0	0	2	1
NEVADA PACKARD	NV	0	0	0	0	0	0	1	
NEW SAVAGE MINE	NV	0	0	5	544	5	544	3	1
NORTHUMBERLAND	NV	0	0	0	0	0	0	2	1
PINSON MINE & MILL	NV	0	0	0	0	0	0	3	1
SIXTEEN-TO-ONE	NV	0	0	0	0	2	425	1	
SMOKY VALLEY MINE AND PLANT	NV	2	575	2	575	2	575	2	2
STERLING MINE	NV	0	0	0	0	1	1050	2	1
TAYLOR MINE	NV	0	0	0	0	0	0	1	
TONOPAH DIVIDE	NV	0	0	3	3755	3	3755	3	1
WELLS TUNGSTEN MINE	NV	0	0	2	1275	2	1275	1	
WINDFALL MINE AND MILL	NV	0	0	1	450	1	450	2	1
BALMAT MINES	NY	0	0	12	430	13	1030	2	
MACINTYRE DEVELOPMENT	NY	0	0	0	0	0	0	3	1
PIERREPONT	NY	0	0	3	678	15	1502	1	
GREENBACK MINE	OR	0	0	0	0	1	30	3	4
NICKEL MOUNTAIN MINE	OR	0	0	0	0	0	0	3	7
CLIMAX MOLYBEDENUM--LANGLOTH, PA.	PA	2	240	2	240	4	354	1	
GTE PRDTS CORP--TOWANDA PLANT	PA	5	299	7	771	8	871	1	
BLACK HILLS TIN COMPANY	SD	0	0	0	0	0	0	2	1
HOMESTAKE MINE YATES SHAFT	SD	0	0	0	0	0	0	2	
ASARCO NEW MARKET MINE	TN	0	0	0	0	0	0		
BEAVER CREEK	TN	0	0	0	0	1	2554		
COY	TN	0	0	0	0	0	0		
EUREKA MINE	TN	0	0	3	1079	4	1105		
GORDONSVILLE-ELMWOOD MINE	TN	0	0	0	0	0	0	3	15
IMMEL	TN	0	0	0	0	1	2554		
YOUNG	TN	0	0	0	0	0	0	3	12
HUDSON PIT & PLANT	TX	0	0	1	660	6	9133	1	
LONE STAR DEPOSITS	TX	0	0	4	806	9	2327	1	
LONE STAR IRON MINE & CONCENTRATOR	TX	0	0	0	0	7	2171	1	
PANNA MARIA MINE	TX	0	0	1	700	4	9772	1	
SIDERITE MINE & MILL	TX	0	0	0	0	0	0	1	
BEAVER MINE (DEER CREEK)	UT	0	0	0	0	0	0	1	
BINGHAM OPEN PIT	UT	1	800	1	800	9	35748	1	
BINGHAM PIT - LEAD + ZINC DEPOSIT	UT	1	800	1	800	9	35748	1	
ESCALANTE	UT	0	0	0	0	1	1000	1	
IRON BLOSSOM MINE	UT	0	0	0	0	0	0	1	
LISBON MINE-RIO ALGOM	UT	0	0	0	0	0	0	1	
MERCUR MINING DISTRICT	UT	0	0	2	420	2	420	1	
MIVIDA MINE	UT	0	0	0	0	0	0	1	
PANDORA MINE	UT	0	0	0	0	0	0	1	
RIM SHAFT	UT	0	0	0	0	0	0	1	
TOPAZ PROPERTIES OF BRUSH-WELLMAN	UT	0	0	0	0	0	0	1	
TRIXIE MINE	UT	0	0	1	75	3	1403	1	
VELVET SHAFT	UT	0	0	0	0	0	0	1	

NAME	STATE	CNT 5K	POP 5K	CNT 10K	POP 10K	CNT_TOT	POP_TOT	STATUS	#
VERNAL MINE	UT	0	0	0	0	0	0	1	
VIPONT MINE	UT	0	0	0	0	0	0	1	
LOWELL MINE	VT	0	0	0	0	3	825	3	7
KNOBHILL MINES	WA	0	0	2	1215	2	1215	3	1
MIDNITE MINE	WA	0	0	0	0	4	765	1	
SHERWOOD MINE	WA	0	0	0	0	4	765	1	
BEAR CREEK PROJECT	WY	0	0	0	0	0	0	1	
BIG EAGLE MINE	WY	0	0	0	0	0	0	1	
GAS HILLS OPERATION	WY	0	0	0	0	0	0	1	
GAS HILLS PROJECT	WY	0	0	0	0	0	0	1	
LUCKY MC MINE	WY	0	0	0	0	0	0	1	
SHIRLEY BASIN MINE	WY	0	0	0	0	0	0	1	

NAME	STATE	DISTANCE TO SURFACE WATER (FEET)	SLOPE (%)	SURFACE WATER NAME	30 MINUTE STORM (IN)	24 HOUR STORM (IN)	ORASTIC
BARBOUR COUNTY MINES PIT 2	AL	485	11	SANDY CREEK	2.5	8	10Ab
ARKANSAS OPERATIONS MINE	AR	0	0	HOLLY CREEK	2.4	7	6H
QUAPAW BAUXITE MINE	AR	0	0	HURRICANE CREEK	2.4	7	6H
WILSON SPRINGS VANADIUM DEPOSIT.	AR	400	2.5	OUCHITA RIVER	2.4	7	6H
ASH PEAK	AZ	800	15	INTERMITANT STREAM	1.4	3.5	2C
COPPER HILL	AZ	100	50	COPPER GULCH	1.9	4	2A
COPPER QUEEN UG LEACHING	AZ	3600	5.6	MULE GULCH	1.8	4	2A
CYPRUS BAGDAD COPPER	AZ	200	75	SPRING CREEK	1.2	3.5	2A
EISENHOWER	AZ	15000	4	INTERMITANT STREAM	1.8	4	2C
ESPERANZA	AZ	4500	21	DEMETRIE WASH	1.8	4	2A
GOLD HILL MINE	AZ	8500	3.8	CANADA DEL ORO	2	4	2C
INSPIRATION	AZ	0	0	BLOODY TANKS WASH	1.9	4	2A
JOHNSON PIT	AZ	0	0	WALNUT WASH	2	4	2C
LAKESHORE	AZ	50	1	INTERMITANT STREAM	1.4	4	2C
MIAMI MINE LEACHING OPERATION	AZ	200	100	BLOODY TANKS WASH	1.9	4	2A
MISSION MINE	AZ	2000	2.5	INTERMITANT STREAM	1.8	4	2C
MORENCI-METCALF	AZ	200	20	San Francisco River	1.4	3.5	2B
NEW CORNELIA MINE	AZ						
OX HIDE	AZ	6500	2.3	BLOODY TANKS WASH	1.9	4	2A
PALO VERDE	AZ	4500	8.9		2	4.5	2C
PINTO VALLEY	AZ	0	0	Pinto Creek	2	4.5	2A
RAY	AZ	375	13.3	Mineral Creek	1.4	4.5	2B
RED CLOUD MINE	AZ	3800	2	RED CLOUD WASH	1	2.5	2B
REYMERT PROPERTY	AZ	150	80	LEWIS AND PRANTY CRE	1.8	4.5	2A
SACATON	AZ	10	0	SANTA CRUZ WASH	1.6	4	2C
SAFFORD PHELPS DODGE	AZ	75	10	TALLY WASH	1.4	3.5	2C
SAN MANUEL COPPER MINE	AZ	1250	21.6	Tuscon Wash	2	4	2A
SAN XAVIER UNIT OPEN PIT	AZ	2000	0.5	INTERMITANT STREAM	1.8	4	2C
SIERRITA	AZ	15600	1.5	Esperaza Wash	2	4.5	2A
SILVER BELL	AZ	10	0	EAST CANYON WASH	1.1	2.5	4B
TIGER TAILINGS DUMP	AZ	0	0	SAN PEDRO RIVER	2	4	2B
TWIN BUTTES	AZ	7900	0.8		2	4.5	2A
TYRO MINE	AZ	600	20	INTERMITANT STREAM	1	2.5	2A
ANDREW TUNGSTEN MINE	CA	0	0	CATTLE CREEK	1.4	10	2B
BEAUREGARD	CA	1800	16	OWENS RIVER	0.8	4	1D
BRUSH CREEK MINE	CA	0	0	WOODRUFF CREEK	1	10	1Ab
COPPEROPOLIS QUARRY	CA	0	0	INTERMITANT STREAM	0.6	6	1Cb
EAGLE MOUNTAIN MINE	CA	0	0	INTERMITANT STREAM	0.8	2	2A
GLEN OLIVE	CA	150	67	BODFISH CREEK	0.8	4	1Aa
GREY EAGLE	CA	0	0	INDIAN CREEK	1	10	1Ab
KEYSTONE	CA	2800	23	INTERMITANT STREAM	0.8	4	1Aa
MOUNTAIN COPPER MINE	CA	500	13	INTERMITANT STREAM	1.2	6	2B
PICACHO GOLD MINE	CA	2000	6	LITTLE PICACHO WASH	0.9	2.5	2A
PINE CREEK MINE	CA			PINE CREEK	0.8	6	1Ba
SANTA RITA ASBESTOS	CA	2000	2	SAN BENITO RIVER	0.6	3	2A
STRAWBERRY MINE	CA	500	12	WEST FORK GRANITE CR	1	6	1Ab
WEST SHASTA DISTRICT	CA	20	100	SACREMENTO RIVER	1.2	6	1Ab
BACHELOR GROUP MINE	CO	50	30	DEXTER CREEK	1.1	3	1Ca
BLACK CLOUD MINE	CO	1750	36.6		1	2.5	1Aa
BONANZA	CO	3200	12.5	INTERMITANT STREAM	1	2.5	4A
BREEZY	CO	100	10	HAMM CREEK	1.1	2.5	4A
BULLDOG	CO	3936	15.4	Willow Creek	1	3	1Ca
BURRO MINE	CO	1000	21	DOLORES RIVER	1.1	2.5	4A
CENTENNIAL MINE	CO	1000	4	BIG GYPSUM CREEK	1.1	2.5	4B
CHILI 3	CO	2600	12	HAMM CREEK	1.1	2.5	4A
CLIMAX CONCENTRATOR	CO	0	0	TENMILE CREEK	1.2	3	1C

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CLIMAX MILL	CO	1000	14	TENMILE CREEK	1.2	3	1D
CLIMAX MINE	CO	100	1	Tenmile Creek	1.2	3	1D
CLIMAX SURFACE MINE (OPEN PIT)	CO	3900	9	TENMILE CREEK	1.2	3	1Ab
DEREMO	CO	2400	4.2	INTERMITANT STREAM	1.1	2.5	4B
EAGLE	CO	100	1	EAGLE RIVER	1.1	3	1Ca
ELLISON	CO	800	21	DOLORES RIVER	1.1	2.5	4A
EVENING STAR MINE	CO	750	56	ATKINSON CREEK	1.1	2.5	4A
FRANKLIN MINE	CO	10	0	PORCUPINE CREEK	1.1	3	1Aa
GEO NO. 1	CO	75	60	LA SAL CREEK	1	2.5	4A
GOLDEN WONDER	CO	800	55	INTERMITANT STREAM	1.1	3	1Aa
GREASY SPOON	CO	4500	16	INTERMITANT STREAM	1	2.5	4A
HENDERSON	CO	625	25.6	West Fork Clear Cree	1.2	3	1Ab
HENDERSON WEST MILL	CO	50	1	WILLIAMS FORK	1.1	3	1D
J. B. CRAWLEY MINES	CO	1600	5	CHICO CREEK	1.1	2.5	4B
KING SOLOMON	CO	1650	47	DOLORES RIVER	1.1	2.5	4A
KING #2	CO	1800	30	SUMMIT CREEK	1.1	2.5	4A
LEADVILLE UNIT MILL	CO	100	20	IOWA CREEK	1.1	3	1D
LONDON FAULT ADIT	CO	150	25	MOSQUITO CREEK	1.2	3	1Ca
MAGPIE 2	CO	2000	0.25	HAMM CREEK	1.1	2.5	4A
MERRY WIDOW	CO	250	28	INTERMITANT STREAM	1.1	2.5	4A
MESA NO. 5 (C-G-27)	CO	100	10	CALAMITY CREEK	1	2.5	4B
MINERAL JOE GROUP	CO	2400	19	EAST PARADOX CREEK	1.1	2.5	4A
MURIETTA	CO	1000	1	HAMM CREEK	1.1	2.5	4A
NEW VERDE	CO	1000	1	CALAMITY CREEK	1	2.5	4A
NIL-TRACE GROUP MINES	CO	10	0	EAST PARADOX CREEK	1.1	2.5	4A
OCTOBER ADIT	CO	1000	48	INTERMITANT STREAM	1	2.5	4B
OLD SETTLER MINE & TUNNEL	CO	500	24	TRAIL CREEK	1.4	3	1Aa
PEANUT #2	CO	3600	0.5	BULL CREEK	1.1	2.5	4A
PRAYER NO. 9	CO	1250	37	LA SAL CREEK	1	2.5	4A
RAJAH 30	CO	4000	22	BROWN CREEK	1	2.5	4A
RAJAH 67+68, 61, 62, AND 63	CO	2000	24	INTERMITANT STREAM	1	2.5	4A
SCHWARTZWALDER MINE	CO	600	63	Ralston Creek	1.2	3	1Ba
SHERMAN TUNNEL (MINE).	CO	0	0	IOWA CREEK	1.1	3	1Ab
SILVER BELL	CO	4800	5	HOUSE WASH	1.4	4	2A
STANDARD MILL	CO	100	80	Cement Creek	1.1	3	1Aa
SUNBEAM GROUP	CO	150	33	INTERMITANT STREAM	1.1	2.5	4A
SUNDAY	CO	850	11	BIG GYPSUM CREEK	1.1	2.5	4A
SUNYSIDE MINE	CO	600	40	Big Creek	0.6	3	1Cb
TNT #2	CO	1250	9.6	INTERMITANT STREAM	1.1	2.5	4B
URA	CO	3200	3.4	BULL CREEK	1.1	2.5	4A
URAVAN MINE	CO	2000	26.5		1	2.5	4B
VAN	CO	200	50	EAST PARADOX CREEK	1.1	2.5	4A
VICTOR PROJECT	CO	2200	18	SQUAW GULCH	1.2	3	1Aa
BIG FOUR	FL	1000	1	SOUTH PRONG ALAFIA R	2.8	9	11B
BONNY LAKE MINE	FL	10	0	NORTH PRONG ALAFIA R	2.8	9	11C
C F HARDEE PHOSPHATE COMPLEX	FL	10	0	PAYNE CREEK	2.8	9	11C
CLEAR SPRINGS	FL	10	0	PEACE RIVER	2.8	9	11C
FORT GREEN MINE	FL	3600	16		2.8	9	11B
FORT MEADE MINE	FL	1500	0.3		2.8	9	11C
FORT MEADE MINE	FL	10	0	PEACE RIVER	2.8	9	11C
FOUR CORNERS MINE	FL	10	0	LAKE BRANCH	2.8	9	11B
GREEN COVE SPRINGS MINERAL SANDS OP	FL	1600	1.9	CLARKES CREEK	2.4	7	11B
HAYNSWORTH MINE	FL	10	0	SOUTH PRONG ALAFIA R	2.8	9	11C
HOOKERS PRAIRIE MINE	FL	10	0	SOUTH PRONG ALAFIA R	2.8	9	11C
KINGSFORD MINE	FL	100	0.1	Guy Branch	2.8	9	11C
LITTLE PAYNE CREEK	FL	5200	0.9	PAYNE CREEK	2.8	9	11B

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LONESOME MINE	FL	300	1.7	S. Prong Alafia Rive	2.8	9	11B
NICHOLS MINE	FL	6000	33	NORTH PRONG ALAFIA R	2.8	9	11C
NORALYN/PHOSPHORIA	FL	300	53	SIXMILE CREEK	2.8	9	11C
ROCKLAND MINE	FL	10	0	SOUTH PRONG ALAFIA R	2.8	9	11C
SADDLE CREEK- EBERSBACH	FL	10	0	SADDLE CREEK	2.8	9	11C
SILVER CITY MINE	FL	1375	52.4	SOUTH PRONG ALAFIA R	2.8	9	11C
SUWANNEE RIVER MINE	FL	500	0.1		2.8	8	11B
TRAIL RIDGE OPERATION	FL	0	0	SOUTH FORK BLACK CRE	2.6	8	11C
WATSON MINE (SWIFT)	FL	10	0	WHIDDEN CREEK	2.8	9	11B
WINDGATE CREEK MINE	FL	800	0.6	MYAKKA RIVER	2.8	9	11C
SUMTER COUNTY MINES	GA	1000	2.5	SWEETWATER CREEK	2.4	7	10Ab
AMAX MOLYBDENUM CO. CONVERSION PLT.	IA	1600	0.4	MISSISSIPPI RIVER	2	5.5	7Ea
BIG BUFFALO	ID	50	10	SHEEP CREEK	0.6	2.5	1Ab
BUNKER HILL MINE	ID	3300	3.6	SOUTH FORK COUER D'A	0.6	3	1Cb
CHAMP MINE	ID	5000	5	INTERMITANT STREAM	0.8	2.3	1Ba
CLAYTON SILVER MINE	ID	0	0	KINNIKINIC CREEK	0.7	2	1Ba
COEUR MINE	ID	600	27	SHEILDS GULCH	0.6	3.5	1Cb
CONDA MINE	ID	22000	0.8	Soda Creek	0.8	2.5	1Ab
CRESCENT MINE	ID	400	40	BIG CREEK	0.6	3	1Cb
DE LAMAR SILVER MINE	ID	4557	21.1	Jordan Creek	0.6	2	3B
GALENA MINE AND MILL	ID	650	80	South Fork Coeur d'A	0.6	3.5	1Cb
GAY MINE	ID	0	0	LINCOLN CREEK	0.7	2	1Ba
HENRY MINE	ID	300	10	ANGUS CREEK	0.8	2.3	1Ba
LANES CREEK PHOSPHATE PROPERTY	ID	400	16	INTERMITANT STREAM	0.8	2.3	1Ba
LUCKY FRIDAY	ID	1600	17.5	South Fork Coeur d'A	0.6	3.5	1Cb
MAYBE CANYON MINE	ID	200	10	INTERMITANT STREAM	0.8	2.3	1Ba
SOUTH MOUNTAIN MINE	ID	200	10	SOUTH MOUNTAIN CREEK	0.5	2	3A
STAR MINE NO. 1 MAIN VEIN	ID	1500	13	SOUTH FORK COUER D'A	0.6	3.5	1Cb
STAR-MORNING UNIT AREA	ID	200	35	CANYON CREEK	0.6	3.5	1Cb
SUNSHINE MINE AND MILL	ID	1140	63.2	CEMENT CREEK	1.1	3	1Aa
THOMPSON CREEK MOLYBDENUM MINE	ID	200	110	PAT HUGHES CREEK	0.7	2	1Ab
THOMPSON CREEK PROJECT	ID		0	THOMPSON CREEK	0.7	2	1Ba
WEST END MINE	ID	600	55	WEST END CREEK	0.6	2.5	1Aa
WOOLEY VALLEY MINE	ID	800	11	LANES CREEK	0.8	2.3	1Ba
YANKEE FORK PLACER	ID	0	0	YANKEE FORK	0.7	2	1Ba
ROSICLARE MINE	IL	3000	1.7	OHIO RIVER	2	6	6Fb
LEXINGTON QUARRY COMPANY	KY	800	1.9	MARSHALL BRANCH	1.8	5	6H
AMAX SPECIALTY METALS-COLDWATER, MI	MI	3600	0.4	SAUK RIVER	1.7	4.5	7Ba
EMPIRE MINE	MI	0	0	GOOSE LAKE OUTLET	1.4	3.8	9Da
REPUBLIC MINE	MI	100	10	MICHIGAMME RIVER	1.4	3.5	9Da
TILDEN MINE	MI	7800	1	ELY CREEK	1.4	3.5	9Da
BUTLER TACONITE MINE	MN	10	50	O'BRIEN CREEK	1.6	4	9Da
CANISTEO PLANT	MN	5800	2	SWAN RIVER	1.6	4	9Da
CONNIE MINE	MN	2000	0.5	EAST TWO RIVER	1.6	4	9Da
DUNKA PIT (ERIE PIT NO 8)	MN	150	10	DUNKA RIVER	1.5	4	9Da
ERIE MINE	MN	6000	1.6	SECOND CREEK	1.6	4	9Da
HIBBING TACONITE MINE	MN	8000	1.3	EAST SWAN RIVER	1.6	4	9Da
MCKINLY MINE	MN	8000	0.6	EMBARASS RIVER	1.6	4	9Da
MINNTAC MINE	MN	0	0	DARK RIVER	1.6	4	9Da
MINORCA MINE	MN	2600	2.6	EAST TWO RIVER	1.6	4	9Da
NATIONAL STEEL PELLET	MN	800	0.6	WELCOME CREEK	1.6	4	9Da
PETER MITCHELL MINE	MN	400	16	PARTRIDGE RIVER	1.6	4	9Da
PLUMMER MILL	MN	11000	1	SWAN RIVER	1.6	4	9Da
RANA MINE	MN	200	1	WEST TWO RIVER	1.6	4	9Da
RESERVE PELLET PLANT	MN	600	3	PARTRIDGE RIVER	1.6	4	9Da
BAUNTRY MINE	MN	440	18.2	EAST TWO RIVER	1.6	4	9Da

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THE HANNA MINING CO AGEN	MN	0	0	WELCOME CREEK	1.6	4	9Da
THUNDERBIRD NORTH	MN	0	0	EAST TWO RIVER	1.6	4	9Da
THUNDERBIRD SOUTH	MN	0	0	ELBOW CREEK	1.6	4	9Da
BRUSHY CREEK DIVISION	MO	0	0	BILLS CREEK	2.2	6	6B
BUICK MINE	MO	0	0	Strother Creek	2.2	6	6B
FLETCHER DIVISION	MO	0	0	West Fork Hollow	2.2	6	6B
MADISON MINE	MO	2500	1.6	TOLLAR BRANCH	2.1	6	6H
MAGMONT MINE	MO	0	0	NEALS CREEK	2.2	6	6B
PEA RIDGE MINE	MO	1400	8.5	MARYS CREEK	2.2	6	6B
PILOT KNOB PLANT	MO	200	20	KNOB CREEK	2.1	6	6B
ST. JOE IRON MINE	MO	1800	5.6	LITTLE COURTOIS CREE	2.2	6	6H
VIBURNUM	MO	750	2.7	Indian Creek	2.2	6	6B
WEST FORK DEPOSIT	MO	50	2	WEST FORK BLACK RIVE	2.2	6	6B
BI-METALLIC	MT	400	20	INTERMITANT STREAM	0.8	2	1Ab
BLACK PINE MINE AND PLANT	MT	300	12	SOUTH FORK LOWER WIL	0.8	2	1Ab
COMET MINE	MT	2000	60	DINGLY CREEK	0.8	2	1Aa
CRYSTAL MINE	MT	400	40	UNCLE SAM GULCH	0.8	2	1Aa
GOLDEN SUNLIGHT MINE AND PLANT	MT	1300	37	INTERMITANT STREAM	0.8	2	1Aa
GRAY EAGLE	MT	1000	12	BISHOP CREEK	1	2.5	1Aa
LITTLE GIANT MINE & MILL	MT	800	25	INTERMITANT STREAM	0.9	2.5	1Ca
RUBY GULCH	MT	0	0	RUBY GULCH	1.1	3	6B
TROY PROJECT	MT	4000	29	Stanley Creek	0.6	3	1Bb
UNCLE SAM MINE	MT	200	20	MILL CREEK	0.9	2.5	1Aa
WARM SPRINGS CREEK MINE	MT	250	16	WARM SPRINGS CREEK	0.8	2.5	1Cb
ZORTMAN-LANDUSKY MINE AND PLANTS	MT	1250	16	Ruby Gulch	1.2	3	6A
LEE CREEK MINE	NC	250	6	Pamlico R. & Durham	2.6	8	10C
STERLING MINE	NJ	1200	13	INTERMITANT STREAM	0.6	1.5	2A
BLACK COLT	NM	900	36	LADRONE CREEK	1.2	3	2A
CENTER MINE	NM	800	12.5	TROUT CREEK	1.4	3.3	4B
CHINO	NM	500	20	Santa Rita Creek	1.2	3.5	2B
CHURCH ROCK MINE	NM	2000	16	Puerco River	1.2	3	4B
CONTINENTAL MILL NO 1	NM	200	18.5	INTERMINTANT STREAM	1.2	3.5	2A
GREAT REPUBLIC	NM	800	20	POVERTY CREEK	1.2	3	2A
JACKPILE PAGUATE URANIUM PIT	NM	350	3	AROYO CHICO	1.1	3	4B
KERR MCGEE SEC 17 MINE	NM	1400	2.1		1.2	3	4B
KERR MCGEE SEC 19 MINE	NM	6750	0.6		1	3	4B
KERR MCGEE SEC 24 MINE	NM	2250	1		1.2	3	4B
KERR MCGEE SEC 29	NM	8500	0.8		1.2	3	4B
KERR MCGEE SEC 30 MINE	NM	4000	0.3		1.2	3	4B
KERR MCGEE SEC 33 MINE	NM	7000	1		1.2	3	4B
KERR MCGEE SEC 35 MINE	NM	7000	1		1.2	3	4B
KERR-MCGEE CONCENTRATOR	NM	100	1	INTERMITANT STREAM	1.2	3	4B
ORTIZ OPEN PIT GOLD MINE	NM	100	20	CUNNINGHAM CREEK	1.2	3	2A
QUESTA MOLYBDENUM MINE	NM	100	16	Red River	1.2	3.5	2B
SECTION 23 MINE	NM	3400	1	INTERMITANT STREAM	1.2	3	4B
ST CLOUD	NM	80	37.5	INTERMITANT STREAM	1.2	3	2A
TYRONE	NM	2000	8.5	Oak Grove Creek	1.2	3.5	2A
WASHINGTON MINE	NM	3000	13	BLAND CREEK	1.2	3	2A
ALLIGATOR RIDGE PROPERTY	NV	12000	2	INTERMITANT STREAM	0.6	1.5	2C
ATLANTA MINE & MILL	NV	400	30	INTERMITANT STREAM	0.8	2	2A
BELL MOUNTAIN	NV	0	0	INTERMITANT STREAM	0.6	1.5	2A
BOREALIS MINE AND PLANT	NV	4250	5.6	MUD SPRING CREEK	0.7	1.5	2C
BROKEN HILLS MINE	NV	800	7.5	INTERMITANT STREAM	0.6	1.5	2C
BULLION MONARCH MINE & MILL	NV	50	10	INTERMITANT STREAM	0.6	2	2C
CANDELARIA PARTNERS MINE AND PLANT	NV	1000	5		0.6	1.5	2A
CARLIN GOLD MINING CO.	NV	800	17.5	INTERMITANT STREAM	0.6	2	2A

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CARLIN PIT	NV	2500	11.2		0.6	2	2C
COPPER CANYON MINE PLACER	NV	16000	3	WILLOW CREEK	0.6	2	2C
CORTEZ GOLD MINES REFINERY/MILL	NV	5500	5.5	INTERMITANT STREAM	0.6	2	2C
ENFIELD B. BELL MINE	NV	500	48	INTERMITANT STREAM	0.6	2	3A
EUREKA-HAMBURG MINE & MILL	NV	2000	25	INTERMITANT STREAM	0.6	2	2A
FIRE CREEK MINE	NV	0	0	FIRE CREEK	0.6	2	2A
GOLDSTRIKE	NV	1400	14	INTERMITANT STREAM	0.6	2	2A
IRON MINE - ART WILSON COMPANY	NV	1600	0.1	INTERMITANT STREAM	0.6	1.5	2E
MANHATTAN MILL	NV	2600	12	MANHATTAN GULCH	0.6	2	2B
MCDERMITT MINE	NV	200	30	INTERMITANT STREAM	0.5	1.5	3B
NEVADA MOLY PROJECT	NV	1000	8	INTERMITANT STREAM	0.6	1.7	2C
NEVADA PACKARD	NV	0	0	PACKARD WASH	0.6	1.5	2A
NEW SAVAGE MINE	NV	100	60	SIXMILE CANYON	0.8	3	2A
NORTHUMBERLAND	NV	2000	6	INTERMITANT STREAM	0.6	2	2A
PINSON MINE & MILL	NV	1100	4.5		0.5	1.8	2C
SIXTEEN-TO-ONE	NV	4000	4	INTERMITANT STREAM	0.6	1.5	2A
SMOKY VALLEY MINE AND PLANT	NV	200	40	INTERMITANT STREAM	0.6	2	2D
STERLING MINE	NV	500	100	WALLKILL RIVER	1.8	6	9C
TAYLOR MINE	NV	1200	24	INTERMITANT STREAM	0.7	2	2A
TONOPAH DIVIDE	NV	800	12.5	INTERMITANT STREAM	0.6	1.5	2C
WELLS TUNGSTEN MINE	NV	1000	44	INTERMITANT STREAM	0.6	2	2A
WINDFALL MINE AND MILL	NV	200	25	INTERMITQNT STREAM	0.6	2	2A
BALMAT MINES	NY	0	0	Turnpike Creek	1.4	4	9B
MACINTYRE DEVELOPMENT	NY	400	10	HUDSON RIVER	1.4	4	9Gb
PIERREPONT	NY	400	5	LEONARD BROOK	1.4	4	9Da
GREENBACK MINE	OR	150	100	EAST CREEK	0.9	6	1Ab
NICKEL MOUNTAIN MINE	OR	800	35	RAIL GULCH	0.8	6	1Ab
CLIMAX MOLYBEDENUM--LANGLOTH, PA.	PA	50	100	BURGETTS FORK	1.6	4.5	6Fb
GTE PRDTS CORP--TOWANDA PLANT	PA	800	10	SUSQUEHANNA RIVER	1.6	5	7Eb
BLACK HILLS TIN COMPANY	SD	1400	21	SAND CREEK	1.5	3.5	1Ab
HOMESTAKE MINE YATES SHAFT	SD	1000	60	Gjold Run Creek	1.6	3.5	6B
ASARCO NEW MARKET MINE	TN	1500	36	DRY LAND CREEK	2	6	6C
BEAVER CREEK	TN	3600	1.4	BEAVER CREEK	2	6	6C
COY	TN	200	5	MOSSY CREEK	2	6	6C
EUREKA MINE	TN	900	5.5	NORTH POTATOE CREEK	2.1	6	8C
GORDONSVILLE-ELMWOOD MINE	TN	5000	1.6	Unnamed stream	2	6	6Fb
IMMEL	TN	1000	5	HOLSTON RIVER	2	6	6C
YOUNG	TN	3250	19.4	Beaver Creek	2	6	6C
HUDSON PIT & PLANT	TX	600	2.5	ROGERS CREEK	2.8	9	10Aa
LONE STAR DEPOSITS	TX	0	0	PEACOCK CREEK	2.6	8.5	10Aa
LONE STAR IRON MINE & CONCENTRATOR	TX	1400	4.6	ROBERTS BRANCH	2.6	8.5	10Aa
PANNA MARIA MINE	TX	1200	6.7	INTERMITANT STREAM	2.8	8	10Ab
SIDERITE MINE & MILL	TX	1000	7.5	INTERMITANT STREAM	1.2	3	2A
BEAVER MINE (DEER CREEK)	UT	4700	4.3	WEST COYOTE CREEK	1.1	2.5	4B
BINGHAM OPEN PIT	UT	0	0	Intermittent Stream	0.8	2.5	2B
BINGHAM PIT - LEAD + ZINC DEPOSIT	UT	0	0	INTERMITANT STREAM	0.8	2.5	2B
ESCALANTE	UT			NO SURFACE WATER CON	0.9	2.3	2A
IRON BLOSSOM MINE	UT	100	40	INTERMITANT STREAM	0.7	2	2A
LISBON MINE-RIO ALGOM	UT	750	5.3	WEST COYOTE CREEK	1.1	2.5	4B
MERCUR MINING DISTRICT	UT	0	0	INTERMITANT STREAM	0.7	2	2A
MIVIDA MINE	UT	3900	6.4	BIG INDIAN WASH	1.1	2.5	4A
PANDORA MINE	UT	2000	1.6	EAST COYOTE CREEK	1.1	2.5	4B
RIM SHAFT	UT	8000	13.5	EAST CANYON WASH	1.1	2.5	4A
TOPAZ PROPERTIES OF BRUSH-WELLMAN	UT	6400	2.5	INTERMITANT STREAM	0.7	2	2C
TRIXIE MINE	UT			NO SURFACE WATER CON	0.8	2.5	2C
VELVET SHAFT	UT	20	30	DRY WASH	1.1	2.5	4A

NAME	STATE	DISTANCE TO SURFACE WATER (FEET)	SLOPE (%)	SURFACE WATER NAME	30 MINUTE STORM (IN)	24 HOUR STORM (IN)	DRASTIC
VERNAL MINE	UT	0	0	BIG BRUSH CREEK	0.8	2	4A
VIPONT MINE	UT	1600	25	BIRCH CREEK	0.6	2	2A
LOWELL MINE	VT	1000	1	BURGESS BRANCH	1.4	4	9B
KNOBHILL MINES	WA	4750	7.4	GRANITE CREEK	0.6	2	1Cb
MIDNITE MINE	WA	0	0	BLUE CREEK	0.6	2	1Cb
SHERWOOD MINE	WA	625	21.6	BLUE CREEK	0.6	2	1Cb
BEAR CREEK PROJECT	WY	2000	7	DRY FORK	1.4	3	6C
BIG EAGLE MINE	WY	2200	3.6	INTERMITANT STREAM	1	2.5	4A
GAS HILLS OPERATION	WY	150	20	BADWATER CREEK	1	2.8	4A
GAS HILLS PROJECT	WY	0	0	FRASER DRAW	1	2.8	4B
LUCKY MC MINE	WY	500	3	Intermittent Stream	1	3	1Ca
SHIRLEY BASIN MINE	WY	1000	75	Intermittent stream	1.2	3	1Ca

NAME	STATE	DEPTH TO GROUNDWATER (FEET)	NET RECHARGE (INCHES/YEAR)	HYDRAULIC CONDUCTIVITY (GAL/DAY/FT SQ)	DISTANCE TO NEAREST POP (MILES)	NATURE OF POP
BARBOUR COUNTY MINES PIT 2	AL	5-15	10+	700-1000	3	RESIDENCES
ARKANSAS OPERATIONS MINE	AR	0-10	4-7	1-100	0	TOWN
QUAPAW BAUXITE MINE	AR	0-10	4-7	1-100	0	TOWN
WILSON SPRINGS VANADIUM DEPOSIT.	AR	75-100	4-7	1-100	0	RESIDENCES
ASH PEAK	AZ	30-50	0-2	300-700	10	TOWN
COPPER HILL	AZ	50-75	0-2	1-100	1.5	TOWN
COPPER QUEEN UG LEACHING	AZ	50-75	0-2	1-100	0.6	TOWN
CYPRUS BAGDAD COPPER	AZ	50-75	0-2	1-100	0.1	TOWN
EISENHOWER	AZ	100+	0-2	50	7.5	TOWN
ESPERANZA	AZ	100+	0-2	10-300	8.5	RANCHes
GOLD HILL MINE	AZ	100+	0-2	300-700	3.5	RANCH
INSPIRATION	AZ	50	0-2	1-100	0	SPRINGS
JOHNSON PIT	AZ	100+	0-2	300-700	4.2	TOWN
LAKESHORE	AZ	100+	0-2	300-700	2.1	TOWN
MIAMI MINE LEACHING OPERATION	AZ	50	0-2	1-100	0	TOWN
MISSION MINE	AZ	350	0-2	50	8	TOWN
MORENCI-METCALF	AZ	30-50	0-2	300-700	0.9	Town
NEW CORNELIA MINE	AZ					
OX HIDE	AZ	50	0-2	1-100	0.6	SPRINGS
PALO VERDE	AZ	100+	0-2	50	8	Town
PINTO VALLEY	AZ	30-50	0-2	1-100	3.1	Town
RAY	AZ	75-100	0-2	300-700	0.9	Residences
RED CLOUD MINE	AZ	30-50	0-2	300-700	9	TOWN
REYMERT PROPERTY	AZ	50-75	0-2	1-100	10.1	TOWN
SACATON	AZ	300	0-2	300-700	1.2	TOWN
SAFFORD PHELPS DODGE	AZ	50-75	0-2	300-700	7	FARMS
SAN MANUEL COPPER MINE	AZ	100+	0-2	1-100	1	Town
SAN XAVIER UNIT OPEN PIT	AZ	100+	0-2	50	7	TOWN
SIERRITA	AZ	100+	66 Tailings po	16-270	2.5	Ranches
SILVER BELL	AZ	50-75	0-2	1-100	2.2	FARMs
TIGER TAILINGS DUMP	AZ	30-50	0-2	300-700	0.6	TOWN
TWIN BUTTES	AZ	400	60 Tailings po	100-300	10	Ranches
TYRO MINE	AZ	100+	0-2	1-100	7.5	TOWN
ANDREW TUNGSTEN MINE	CA	0-10	0-2	300-700	5	RESIDENCES
BEAUREGARD	CA	5-15	4-7	700-1000	0.3	CAMP
BRUSH CREEK MINE	CA	0-10	0-2	100-300	1.7	TOWN
COPPEROPOLIS QUARRY	CA	30-50	2-4	100-300	10	TOWN
EAGLE MOUNTAIN MINE	CA	50-75	0-2	1-100	0	TOWN
GLEN OLIVE	CA	50-100	0-2	100-300	2.5	RANCH
GREY EAGLE	CA	75-100	0-2	100-300	4	TOWN
KEYSTONE	CA	100+	0-2	100-300	5.1	FARMS
MOUNTAIN COPPER MINE	CA	30-50	0-2	300-700	0.4	RESIDENCES
PICACHO GOLD MINE	CA	50-75	0-2	1-100	5	TOWN
PINE CREEK MINE	CA	30-50	0-2	100-300	6	TOWN
SANTA RITA ASBESTOS	CA	50-75	0-2	1-100	10.1	FARMS
STRAWBERRY MINE	CA	75-100	0-2	100-300	10.1	RESIDENCES
WEST SHASTA DISTRICT	CA	10-20	0-2	100-300	3	TOWN
BACHELOR GROUP MINE	CO	75-100	0-2	100-300	1.5	RESIDENCES
BLACK CLOUD MINE	CO	50-100	0-2	100-300	12	Town
BONANZA	CO	50-75	0-2	1-100	5	RANCHes
BREEZY	CO	75-100	0-2	1-100	6	RESIDENCES
BULLDOG	CO	75-100	0-2	100-300	0.7	Town
BURRO MINE	CO	75-100	0-2	1-100	0.6	RESIDENCES
CENTENNIAL MINE	CO	50-75	0-2	1-100	11	RESIDENCES
CHILLI G	CO	75-100	0-2	1-100	6	RESIDENCES
CLIMAX CONCENTRATOR	CO	0-10	4-7	700-1000	3	RESIDENCES

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CLIMAX MILL	CO	5-15	4-7	700-1000	0	TOWN
CLIMAX MINE	CO	5-15	4-7	700-1000	0	Town
CLIMAX SURFACE MINE (OPEN PIT)	CO	75-100	0-2	100-300	0.2	TOWN
JEREMO	CO	50-75	0-2	1-100	2	FARMs
EAGLE	CO	75-100	0-2	100-300	0	TOWN
ELLISON	CO	75-100	0-2	1-100	0.6	RESIDENCES
EVENING STAR MINE	CO	75-100	0-2	1-100	0.2	RESIDENCES
FRANKLIN MINE	CO	100+	0-2	100-300	5	RESIDENCES
GEO NO. 1	CO	75-100	0-2	1-100	7.7	RESIDENCES
GOLDEN WONDER	CO	100+	0-2	100-300	0.9	RANCHes
GREASY SPOON	CO	75-100	0-2	1-100	1.2	RESIDENCES
HENDERSON	CO	75-100	0-2	100-300	0.4	Ranches
HENDERSON WEST MILL	CO	5-15	4-7	700-1000	1.2	RESIDENCES
J. B. CRAWLEY MINES	CO	50-75	0-2	1-100	0	TOWN
KING SOLOMON	CO	75-100	0-2	1-100	4.5	RESIDENCEs
KING #2	CO	75-100	0-2	1-100	8	TRAILER PARK
LEADVILLE UNIT MILL	CO	5-15	4-7	700-1000	1.4	RESIDENCEs
LONDON FAULT ADIT	CO	75-100	0-2	100-300	9	TOWN
MAGPIE 2	CO	75-100	0-2	1-100	6	RESIDENCES
MERRY WIDOW	CO	75-100	0-2	1-100	2.5	TOWN
MESA NO. 5 (C-G-27)	CO	50-75	0-2	1-100	0	RESIDENCES
MINERAL JOE GROUP	CO	75-100	0-2	1-100		NONE
MURIETTA	CO	75-100	0-2	1-100	6	RESIDENCES
NEW VERDE	CO	75-100	0-2	1-100	0	RESIDENCES
NIL-TRACE GROUP MINES	CO	75-100	0-2	1-100		NONE
OCTOBER ADIT	CO	50-75	0-2	1-100	5	TOWN
OLD SETTLER MINE & TUNNEL	CO	100+	0-2	100-300	1.4	TOWN
PEANUT #2	CO	75-100	0-2	1-100	0.5	RESIDENCES
PRAYER NO. 9	CO	75-100	0-2	1-100	0.4	RESIDENCES
RAJAH 30	CO	75-100	0-2	1-100	5	RANCHes
RAJAH 67+68, 61, 62, AND 63	CO	75-100	0-2	1-100	5	RANCHes
SCHWARTZWALDER MINE	CO	30-50	0-2	100-300	2	Reservoir
SHERMAN TUNNEL (MINE).	CO	50-100	0-2	100-300	3.5	RESIDENCE
SILVER BELL	CO	100+	0-2	1-100	0	TOWN
STANDARD MILL	CO	10-30	0-2	100-300	6	Town
SUNBEAM GROUP	CO	75-100	0-2	1-100	2.5	TOWN
SUNDAY	CO	75-100	0-2	1-100	5	RESIDENCES
SUNYSIDE MINE	CO	30-50	2-4	100-300	1	Residences
TNT #2	CO	50-75	0-2	1-100	5	TOWN
UEA	CO	75-100	0-2	1-100	0.5	FARMs
URAVAN MINE	CO	50-75	0-2	1-100	1	Town
VAN	CO	75-100	0-2	1-100		NONE
VICTOR PROJECT	CO	100+	0-2	100-300	0	RESIDENCES
BIG FOUR	FL	5-15	10+	700-1000	4	FARMs
BONNY LAKE MINE	FL	0-5	10+	2000+	0	TOWN
C F HARDEE PHOSPHATE COMPLEX	FL	0-5	10+	2000+	0	FARM
CLEAR SPRINGS	FL	0-5	10+	2000+	0.5	TOWN
FORT GREEN MINE	FL	5-15	10+	700-1000	0	Surface Water
FORT MEADE MINE	FL	0-5	10+		0	TOWN
FORT MEADE MINE	FL	0-5	10+	2000+	0	TOWN
FOUR CORNERS MINE	FL	0-10	10+	700-1000	0	FARM
GREEN COVE SPRINGS MINERAL BANDS OF	FL	5-15	10+	700-1000	1	RESIDENCES
HAYNSWORTH MINE	FL	0-5	10+	2000+	0	FARMs
HOOKERS PRAIRIE MINE	FL	0-5	10+	2000+	2.4	TOWN
KINGSFORD MINE	FL	0-5	10+	2000	0.3	Town
LITTLE PAYNE CREEK	FL	5-15	10+	700-1000	0	FARMs

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LONESOME MINE	FL	5-15	10+	700-1000	0	Surface Water
NICHOLS MINE	FL	5-15	10+	700-1000	0	RESIDENCES
NORALYN/PHOSPHORIA	FL	0-5	10+	2000+	0.5	FARMs
ROCKLAND MINE	FL	0-5	10+	2000+	0	FARMs
SADDLE CREEK- EBERSBACH	FL	0-5	10+	2000+	0	TOWN
SILVER CITY MINE	FL	0-5	10+	2000+	0	TOWN
SUWANNEE RIVER MINE	FL	5-15	10+	700-1000	0	Surface Water
TRAIL RIDGE OPERATION	FL	0-5	10+	2000+	0	FARMS
WATSON MINE (SWIFT)	FL	0-10	10+	700-1000	0.5	FARMs
WINDGATE CREEK MINE	FL	0-5	10+	2000+	1	FARMs
SUMTER COUNTY MINES	GA	75-100	5-10	100-300	3.1	FARMs
AMAX MOLYBDENUM CO. CONVERSION PLT.	IA	15-30	4-7	700-1000	1.5	TRAILER PARK
BIG BUFFALO	ID	0-10	0-2	100-300	10	TOWN
BUNKER HILL MINE	ID	30-50	2-4	100-300	0	TOWN
CHAMP MINE	ID	30-50	0-2	100-300	4.5	RANCHes
CLAYTON SILVER MINE	ID	0-10	0-2	100-300	0.6	TOWN
COEUR MINE	ID	30-50	2-4	100-300	0.5	TOWN
CONDA MINE	ID	75-100	0-2	100-300	0	Town
CRESCENT MINE	ID	30-50	2-4	100-300	0.2	RESIDENCES
DE LAMAR SILVER MINE	ID	5-15	2-4	700-1000	1	Residences
GALENA MINE AND MILL	ID	30-50	2-4	100-300	1	Residences
GAY MINE	ID	30-50	0-2	100-300	10	FARMS
HENRY MINE	ID	30-50	0-2	100-300	4	RANCHes
LANES CREEK PHOSPHATE PROPERTY	ID	30-50	0-2	100-300	1.8	RANCHes
LUCKY FRIDAY	ID	30-50	2-4	100-300	0.5	Town
MAYBE CANYON MINE	ID	30-50	0-2	100-300	5	RANCH
SOUTH MOUNTAIN MINE	ID	75-100	2-4	1000-2000	10.1	TOWN
STAR MINE NO. 1 MAIN VEIN	ID	30-50	2-4	100-300	0	TOWN
STAR-MORNING UNIT AREA	ID	30-50	2-4	100-300	0	RESIDENCES
SUNSHINE MINE AND MILL	ID	10-30	0-2	100-300	8	TOWN
THOMPSON CREEK MOLYBDENUM MINE	ID	75-100	0-2	100-300	10.1	RESIDENCES
THOMPSON CREEK PROJECT	ID	0-10	0-2	100-300	10.1	RESIDENCES
WEST END MINE	ID	100+	0-2	100-300	10.1	TOWN
WOOLEY VALLEY MINE	ID	30-50	0-2	100-300	5	RANCHes
YANKEE FORK PLACER	ID	0-10	0-2	100-300	2.7	TOWN
ROSICLARE MINE	IL	5-15	7-10	1000-2000	0	TOWN
LEXINGTON QUARRY COMPANY	KY	75-100	4-7	1-100	0	TRAILER PARK
AMAX SPECIALTY METALS-COLDWATER, MI	MI	15-30	7-10	1000-2000	0	TOWN
EMPIRE MINE	MI	0-10	7-10	1-100	0.7	TOWN
REPUBLIC MINE	MI	15-30	7-10	1-100	0	TOWN
TILDEN MINE	MI	15-30	7-10	1-100	0.7	RESIDENCES
BUTLER TACONITE MINE	MN	15-30	7-10	1-100	0	TOWN
CANISTEO PLANT	MN	15-30	7-10	1-100	0.7	TOWN
CONNIE MINE	MN	15-30	7-10	1-100	0.6	TOWN
DUNKA PIT (ERIE PIT NO 8)	MN	15-30	7-10	1-100	1	RESIDENCES
ERIE MINE	MN	15-30	7-10	1-100	6.5	TOWN
HIBBING TACONITE MINE	MN	15-30	7-10	1-100	1.5	TOWN
MCKINLY MINE	MN	0-10	7-10	1-100	2	TOWN
MINNTAC MINE	MN	0-10	7-10	1-100	10.1	TOWN
MINORCA MINE	MN	15-30	7-10	1-100	1.5	TOWN
NATIONAL STEEL PELLET	MN	15-30	7-10	1-100	0.3	TOWN
PETER MITCHELL MINE	MN	0-10	7-10	1-100	10.1	TOWN
PLUMMER MILL	MN	15-30	7-10	1-100	0	TOWN
RANA MINE	MN	15-30	7-10	1-100	0	TOWN
RESERVE PELLET PLANT	MN	15-30	7-10	1-100	10.1	TOWN
BALNTRY MINE	MN	15-30	7-10	1-100	0	TOWN

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THE HANNA MINING CO AGEN	MN	0-10	7-10	1-100	0	TOWN
THUNDERBIRD NORTH	MN	0-10	7-10	1-100	0	TOWN
THUNDERBIRD SOUTH	MN	0-10	7-10	1-100	0	TOWN
BRUSHY CREEK DIVISION	MO	0-10	4-7	700-1000	0	RESIDENCES
BUICK MINE	MO	15-30	4-7	700-1000	1	Town
FLETCHER DIVISION	MO	15-30	4-7	700-1000	1	Ranches
MADISON MINE	MO	75-100	4-7	1-100	0	TOWN
MAGMONT MINE	MO	0-10	4-7	700-1000	0.6	RESIDENCES
PEA RIDGE MINE	MO	15-30	4-7	700-1000	1.5	RESIDENCES
PILOT KNOB PLANT	MO	15-30	4-7	700-1000	0	TOWN
ST. JOE IRON MINE	MO	75-100	4-7	1-100	0.4	RESIDENCES
VIBURNUM	MO	15-30	4-7	700-1000	0	Residences
WEST FORK DEPOSIT	MO	15-30	4-7	700-1000	0	RESIDENCES
BI-METALLIC	MT	75-100	0-2	100-300	4	TOWN
BLACK PINE MINE AND PLANT	MT	75-100	0-2	100-300	10	FARMS
COMET MINE	MT	100+	0-2	100-300	8.5	RESIDENCES
CRYSTAL MINE	MT	100+	0-2	100-300	5	TOWN
GOLDEN SUNLIGHT MINE AND PLANT	MT	100+	0-2	100-300	6	TOWN
GRAY EAGLE	MT	100+	0-2	100-300	9	TOWN
LITTLE GIANT MINE & MILL	MT	75-100	0-2	100-300	4.6	TOWN
RUBY GULCH	MT	15-30	4-7	700-1000	0.8	TOWN
TROY PROJECT	MT	50-75	2-4	100-300	1	Residences
UNCLE SAM MINE	MT	100+	0-2	100-300	10.1	TOWN
WARM SPRINGS CREEK MINE	MT	30-50	2-4	100-300	3.8	RESIDENCES
ZORTMAN-LANDUSKY MINE AND PLANTS	MT	70-150	0-2	1-100	1.5	Town
LEE CREEK MINE	NC	0-5	10+	1000-2000	0.4	Large River
STERLING MINE	NJ	50-75	0-2	1-100		NONE
BLACK COLT	NM	50-75	0-2	1-100	0.6	TOWN
CENTER MINE	NM	50-75	0-2	1-100	2.8	FARMS
CHINO	NM	30-50	0-2	300-700	0	Residences
CHURCH ROCK MINE	NM	50-75	0-2	1-100	1.5	Ranches
CONTINENTAL MILL NO 1	NM	50-75	0-2	1-100	0.5	TOWN
GREAT REPUBLIC	NM	50-75	0-2	1-100	9	TOWN
JACKPILE PAGUATE URANIUM PIT	NM	50-75	0-2	1-100	10.1	RANCHes
KERR MCGEE SEC 17 MINE	NM	50-75	0-2	1-10	1.3	Town
KERR MCGEE SEC 19 MINE	NM	50-75	0-2	1-10	0.4	Town
KERR MCGEE SEC 24 MINE	NM	50-75	0-2	1-10	1.6	Town
KERR MCGEE SEC 29	NM	50-100	0-2	1-10	0.5	Town
KERR MCGEE SEC 30 MINE	NM	50-75	0-2	1-10	0	Town
KERR MCGEE SEC 33 MINE	NM	50-75	0-2	50-75	1.9	Town
KERR MCGEE SEC 35 MINE	NM	50-75	0-2	1-10	4.2	Town
KERR-MCGEE CONCENTRATOR	NM	50-75	0-2	1-10	1.2	TOWN
ORTIZ OPEN PIT GOLD MINE	NM	50-75	0-2	1-100	0.5	RANCHes
QUESTA MOLYBDENUM MINE	NM	30-50	0-2	300-700	0.4	Springs
SECTION 23 MINE	NM	50-75	0	1-10	2.7	TOWN
ST CLOUD	NM	50-75	0-2	1-100	6	RANCHes
TYRONE	NM	50-75	0-2	1-100	1.5	Town
WASHINGTON MINE	NM	50-75	0-2	1-100	4.9	RANCHes
ALLIGATOR RIDGE PROPERTY	NV	50-75	0-2	300-700		NONE
ATLANTA MINE & MILL	NV	50-75	0-2	1-100		NONE
BELL MOUNTAIN	NV	50-75	0-2	1-100		NONE
BOREALIS MINE AND PLANT	NV	50-75	0-2	300-700		NONE
BROKEN HILLS MINE	NV	50-75	0-2	300-700	1.7	NONE
BULLION MONARCH MINE & MILL	NV	50-75	0-2	300-700	10	TOWN
CANDELARIA PARTNERS MINE AND PLANT	NV	No groundwat0		1-100	3	Ranches
CARLIN GOLD MINING CO.	NV	50-75	0-2	1-100		NONE

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CARLIN PIT	NV	90	0-2	300-700		NONE
COPPER CANYON MINE PLACER	NV	50-75	0-2	300-700		NONE
CORTEZ GOLD MINES REFINERY/MILL	NV	50-75	0-2	300-700	0	TOWN
ENFIELD B. BELL MINE	NV	75-100	2-4	1000-2000	10	RANCHES
EUREKA-HAMBURG MINE & MILL	NV	50-75	0-2	1-100	1	TOWN
FIRE CREEK MINE	NV	50-75	0-2	1-100	15	RANCHes
GOLDSTRIKE	NV	50-75	0-2	1-100	10	TOWN
IRON MINE - ART WILSON COMPANY	NV	75-100	0-2	700-1000		NONE
MANHATTAN MILL	NV	30-50	0-2	300-700	0	TOWN
MCDERMITT MINE	NV	5-15	2-4	700-1000	0	TOWN
NEVADA MOLY PROJECT	NV	50-75	0-2	300-700		NONE
NEVADA PACKARD	NV	50-75	0-2	1-100		NONE
NEW SAVAGE MINE	NV	50-75	0-2	1-100	3	RESIDENCES
NORTHUMBERLAND	NV	50-75	0-2	1-100		NONE
PINSON MINE & MILL	NV	50-75	0-2	300-700	10	TOWN
SIXTEEN-TO-ONE	NV	50-75	0-2	1-100		NONE
SMOKY VALLEY MINE AND PLANT	NV	30-50	0-2	300-700	0	TOWN
STERLING MINE	NV	30-50	2-4	100-300	0	TOWN
TAYLOR MINE	NV	50-75	0-2	1-100		NONE
TONOPAH DIVIDE	NV	50-75	0-2	300-700		NONE
WELLS TUNGSTEN MINE	NV	50-75	0-2	1-100	2	RANCHES
WINDFALL MINE AND MILL	NV	50-75	0-2	1-100	4	TOWN
BALMAT MINES	NY	0-5	7-10	.02	0.2	residences
MACINTYRE DEVELOPMENT	NY	5-15	10+	1000-2000	0	TOWN
PIERREPONT	NY	15-30	7-10	1-100	0	TOWN
GREENBACK MINE	OR	75-100	0-2	100-300	1.5	TOWN
NICKEL MOUNTAIN MINE	OR	75-100	0-2	100-300	2.7	FARMS
CLIMAX MOLYBEDENUM--LANGLOTH, PA.	PA	5-15	7-10	1000-2000	0	TOWN
GTE PRDTS CORP--TOWANDA PLANT	PA	5-15	10+	700-1000	0	TOWN
BLACK HILLS TIN COMPANY	SD	75-100	0-2	100-300	10	TOWN
HOMESTAKE MINE YATES SHAFT	SD	15-30	4-7	700-1000	0	Town
ASARCO NEW MARKET MINE	TN	0-10	2-4	1-100	0	RESIDENCES
BEAVER CREEK	TN	10-30	2-4	1-100	0.2	FARMS
COY	TN	10-30	2-4	1-100	0	TOWN
EUREKA MINE	TN	30-50	2-4	100-300	0.2	TOWN
GORDONSVILLE-ELMWOOD MINE	TN	5-15	7-10	1000-2000	3.2	Town
IMMEL	TN	10-30	2-4	1-100	0.2	FARMS
YOUNG	TN	30-50	2-4	1-100	4	Town
HUDSON PIT & PLANT	TX	100+	0-2	300-700	0	FARMS
LONE STAR DEPOSITS	TX	0-10	0-2	300-700	1	TOWN
LONE STAR IRON MINE & CONCENTRATOR	TX	100+	0-2	300-700	1	FARMS
PANNA MARIA MINE	TX	5-15	10+	700-1000	0.1	FARMs
SIDERITE MINE & MILL	TX	50-75	0-2	1-100	3.5	RANCHes
BEAVER MINE (DEER CREEK)	UT	50-75	0-2	1-100	0.6	TOWN
BINGHAM OPEN PIT	UT	30-50	0-2	300-700	0	Town
BINGHAM PIT - LEAD + ZINC DEPOSIT	UT	30-50	0-2	300-700	0	TOWN
ESCALANTE	UT	50-75	0-2	1-100	1.5	FARMS
IRON BLOSSOM MINE	UT	50-75	0-2	1-100	10.1	RANCHes
LISBON MINE-RIO ALGOM	UT	50-75	0-2	1-100	2.5	RANCHes
MERCUR MINING DISTRICT	UT	50-75	0-2	1-100	10.1	RANCHes
MIVIDA MINE	UT	75-100	0-2	1-100	10.1	RANCHes
PANDORA MINE	UT	50-75	0-2	1-100	10.1	RANCHes
RIM SHAFT	UT	75-100	0-2	1-100	10.1	RANCHes
TOPAZ PROPERTIES OF BRUSH-WELLMAN	UT	50-75	0-2	300-700	10.1	RANCHes
TRIXIE MINE	UT	50-75	0-2	300-700	9	TOWN
VELVET SHAFT	UT	75-100	0-2	1-100	10.1	RANCHes

NAME	STATE	DEPTH TO GROUNDWATER (FEET)	NET RECHARGE (INCHES/YEAR)	HYDRAULIC CONDUCTIVITY (GAL/DAY/FT SQ)	DISTANCE TO NEAREST POP (MILES)	NATURE OF POP
VERNAL MINE	UT	0-10	0-2	1-100	5.1	RESIDENCES
VIPONT MINE	UT	50-75	0-2	1-100	10.1	RANCHES
LOWELL MINE	VT	5-15	7-10	700-1000	3.1	RESIDENCES
KNOBHILL MINES	WA	30-50	2-4	100-300	1.5	TOWN
MIDNITE MINE	WA	30-50	2-4	100-300	5.1	RESIDENCES
SHERWOOD MINE	WA	30-50	2-4	100-300	5.1	RESIDENCES
BEAR CREEK PROJECT	WY	30-50	2-4	1-100	5	RANCHes
BIG EAGLE MINE	WY	75-100	0-2	1-100	4.2	RANCHes
GAS HILLS OPERATION	WY	10-30	0.6	10-50	3	RANCHes
GAS HILLS PROJECT	WY	10-30	0.6	10-50	0.4	MINING CAMP
LUCKY MC MINE	WY	10-30	0-2	22.5	1	Ranch
SHIRLEY BASIN MINE	WY	10-15	0-2	225-450	0.5	Trailer Park

NAME	STATE	GROUNDWATER HARDNESS	GROUNDWATER QUALITY PROBLEMS
BARBOUR COUNTY MINES PIT 2	AL	<80	
ARKANSAS OPERATIONS MINE	AR	<80	
QUAPAW BAUXITE MINE	AR	<80	
WILSON SPRINGS VANADIUM DEPOSIT.	AR	<80	
ASH PEAK	AZ	180-240	
COPPER HILL	AZ	120-180	
COPPER QUEEN UG LEACHING	AZ	120-180	
CYPRUS BAGDAD COPPER	AZ	120-180	
EISENHOWER	AZ	120-180	TDS
ESPERANZA	AZ	120-180	TDS
GOLD HILL MINE	AZ	120-180	TDS
INSPIRATION	AZ	120-180	
JOHNSON PIT	AZ	120-180	TDS
LAKESHORE	AZ	180-240	TDS
MIAMI MINE LEACHING OPERATION	AZ	120-180	
MISSION MINE	AZ	120-180	TDS
MORENCI-METCALF	AZ	180-240	
NEW CORNELIA MINE	AZ		
OX HIDE	AZ	120-180	
PALO VERDE	AZ	120-180	TDS
PINTO VALLEY	AZ	120-180	
RAY	AZ	180-240	
RED CLOUD MINE	AZ	180-240	TDS
REYMERT PROPERTY	AZ	120-180	
SACATON	AZ	180-240	TDS
SAFFORD PHELPS DODGE	AZ	180-240	
SAN MANUEL COPPER MINE	AZ	120-180	TDS
SAN XAVIER UNIT OPEN PIT	AZ	120-180	TDS
SIERRITA	AZ	120-180	
SILVER BELL	AZ	180-240	
TIGER TAILINGS DUMP	AZ	120-180	TDS
TWIN BUTTES	AZ	120-180	
TYRO MINE	AZ	180-240	TDS
ANDREW TUNGSTEN MINE	CA	120-180	
BEAUREGARD	CA	180-240	
BRUSH CREEK MINE	CA	180-240	
COPPEROPOLIS QUARRY	CA	180-240	
EAGLE MOUNTAIN MINE	CA	180-240	
GLEN OLIVE	CA	120-180	
GREY EAGLE	CA	80-120	
KEYSTONE	CA	180-240	
MOUNTAIN COPPER MINE	CA	120-180	
PICACHO GOLD MINE	CA	180-240	TDS
PINE CREEK MINE	CA	180-240	
SANTA RITA ASBESTOS	CA	120-180	
STRAWBERRY MINE	CA	180-240	
WEST SHASTA DISTRICT	CA	120-180	
BACHELOR GROUP MINE	CO	180-240	
BLACK CLOUD MINE	CO	180-240	
BONANZA	CO	180-240	
BREEZY	CO	180-240	
BULLDOG	CO	120-180	
BURRO MINE	CO	180-240	
CENTENNIAL MINE	CO	180-240	
CHILI S	CO	180-240	
CLIMAX CONCENTRATOR	CO	120-180	

NAME	STATE	GROUNDWATER HARDNESS	GROUNDWATER QUALITY PROBLEMS
CLIMAX MILL	CO	120-180	
CLIMAX MINE	CO	120-180	
CLIMAX SURFACE MINE (OPEN PIT)	CO	120-180	
DEREMO	CO	180-240	SIGNIFICANT POLLUTION
EAGLE	CO	180-240	
ELLISON	CO	180-240	
EVENING STAR MINE	CO	180-240	
FRANKLIN MINE	CO	120-180	
GEO NO. 1	CO	180-240	
GOLDEN WONDER	CO	180-240	
GREASY SPOON	CO	180-240	
HENDERSON	CO	120-180	TDS
HENDERSON WEST MILL	CO	180-240	
J. B. CRAWLEY MINES	CO	180-240	SIGNIFICANT POLLUTION
KING SOLOMON	CO	180-240	
KING #2	CO	180-240	
LEADVILLE UNIT MILL	CO	180-240	
LONDON FAULT ADIT	CO	120-180	
MAGPIE 2	CO	180-240	
MERRY WIDOW	CO	180-240	
MESA NO. 5 (C-G-27)	CO	180-240	
MINERAL JOE GROUP	CO	180-240	
MURIETTA	CO	180-240	
NEW VERDE	CO	180-240	
NIL-TRACE GROUP MINES	CO	180-240	
OCTOBER ADIT	CO	180-240	
OLD SETTLER MINE & TUNNEL	CO	120-180	
PEANUT #2	CO	180-240	
PRAYER NO. 9	CO	180-240	
RAJAH 30	CO	180-240	
RAJAH 67+68, 61, 62, AND 63	CO	180-240	
SCHWARTZWALDER MINE	CO	120-180	
SHERMAN TUNNEL (MINE).	CO	180-240	
SILVER BELL	CO	120-180	TDS
STANDARD MILL	CO	180-240	
SUNBEAM GROUP	CO	180-240	
SUNDAY	CO	180-240	
SUNYSIDE MINE	CO	<80	
TNT #2	CO	180-240	
URA	CO	180-240	
URAVAN MINE	CO	180-240	
VAN	CO	180-240	
VICTOR PROJECT	CO	120-180	TDS
BIG FOUR	FL	>240	TDS
BONNY LAKE MINE	FL	>240	TDS
C F HARDEE PHOSPHATE COMPLEX	FL	>240	TDS
CLEAR SPRINGS	FL	>240	TDS
FORT GREEN MINE	FL	>240	TDS
FORT MEADE MINE	FL	>240	TDS
FORT MEADE MINE	FL	>240	TDS
FOUR CORNERS MINE	FL	>240	TDS
GREEN COVE SPRINGS MINERAL SANDS OP	FL	>240	
HAYNSWORTH MINE	FL	>240	TDS
HOOKERS PRAIRIE MINE	FL	>240	TDS
KINGSFORD MINE	FL	>240	TDS
LITTLE PAYNE CREEK	FL	>240	TDS

NAME	STATE	GROUNDWATER HARDNESS	GROUNDWATER QUALITY PROBLEMS
LONESOME MINE	FL	>240	TDS
NICHOLS MINE	FL	>240	TDS
NORALYN/PHOSPHORIA	FL	>240	TDS
ROCKLAND MINE	FL	>240	TDS
SADDLE CREEK- EBERSBACH	FL	>240	TDS
SILVER CITY MINE	FL	>240	TDS
SUWANNEE RIVER MINE	FL	>240	Significant Pollution
TRAIL RIDGE OPERATION	FL	>240	SIGNIFICANT POLLUTION
WATSON MINE (SWIFT)	FL	>240	TDS
WINDGATE CREEK MINE	FL	>240	TDS
SUMTER COUNTY MINES	GA	80-120	
AMAX MOLYBDENUM CO. CONVERSION PLT.	IA	>240	SIGNIFICANT POLLUTION
BIG BUFFALO	ID	120-180	
BUNKER HILL MINE	ID	120-180	
CHAMP MINE	ID	>240	
CLAYTON SILVER MINE	ID	120-180	
COEUR MINE	ID	120-180	
CONDA MINE	ID	80-120	
CRESCENT MINE	ID	120-180	
DE LAMAR SILVER MINE	ID	120-180	
GALENA MINE AND MILL	ID	120-180	
GAY MINE	ID	>240	
HENRY MINE	ID	>240	
LANES CREEK PHOSPHATE PROPERTY	ID	>240	
LUCKY FRIDAY	ID	120-180	
MAYBE CANYON MINE	ID	>240	
SOUTH MOUNTAIN MINE	ID	<80	
STAR MINE NO. 1 MAIN VEIN	ID	120-180	
STAR-MORNING UNIT AREA	ID	120-180	
SUNSHINE MINE AND MILL	ID	180-240	SIGNIFICANT POLLUTION
THOMPSON CREEK MOLYBDENUM MINE	ID	120-180	
THOMPSON CREEK PROJECT	ID	120-180	
WEST END MINE	ID	120-180	
WOOLEY VALLEY MINE	ID	>240	
YANKEE FORK PLACER	ID	120-180	
ROSICLARE MINE	IL	120-180	TDS
LEXINGTON QUARRY COMPANY	KY	>240	TDS
AMAX SPECIALTY METALS-COLDWATER, MI	MI	>240	TDS
EMPIRE MINE	MI	120-180	SIGNIFICANT POLLUTION
REPUBLIC MINE	MI	120-180	SIGNIFICANT POLLUTION
TILDEN MINE	MI	120-180	SIGNIFICANT POLLUTION
BUTLER TACONITE MINE	MN	180-240	
CANISTEO PLANT	MN	180-240	
CONNIE MINE	MN	180-240	
DUNKA PIT (ERIE PIT NO 8)	MN	180-240	
ERIE MINE	MN	180-240	
HIBBING TACONITE MINE	MN	180-240	
MCKINLY MINE	MN	180-240	
MINNTAC MINE	MN	180-240	
MINORCA MINE	MN	180-240	
NATIONAL STEEL PELLET	MN	180-240	
PETER MITCHELL MINE	MN	180-240	
PLUMMER MILL	MN	180-240	
RANA MINE	MN	180-240	
RESERVE PELLET PLANT	MN	180-240	
SALNTRY MINE	MN	180-240	

NAME	STATE	GROUNDWATER HARDNESS	GROUNDWATER QUALITY PROBLEMS
THE HANNA MINING CO AGEN	MN	180-240	
THUNDERBIRD NORTH	MN	180-240	
THUNDERBIRD SOUTH	MN	180-240	
BRUSHY CREEK DIVISION	MO	>240	
BUICK MINE	MO	>240	
FLETCHER DIVISION	MO	120-180	
MADISON MINE	MO	>240	
MAGMONT MINE	MO	>240	
PEA RIDGE MINE	MO	>240	
PILOT KNOB PLANT	MO	>240	
ST. JOE IRON MINE	MO	>240	
VIBURNUM	MO	>240	
WEST FORK DEPOSIT	MO	>240	
BI-METALLIC	MT	120-180	
BLACK PINE MINE AND PLANT	MT	120-180	
COMET MINE	MT	120-180	
CRYSTAL MINE	MT	120-180	
GOLDEN SUNLIGHT MINE AND PLANT	MT	120-180	
GRAY EAGLE	MT	180-240	
LITTLE GIANT MINE & MILL	MT	180-240	
RUBY GULCH	MT	>240	
TROY PROJECT	MT	120-180	
UNCLE SAM MINE	MT	180-240	
WARM SPRINGS CREEK MINE	MT	180-240	
ZORTMAN-LANDUSKY MINE AND PLANTS	MT	>240	
LEE CREEK MINE	NC	>240	TDS
STERLING MINE	NJ	180-240	
BLACK COLT	NM	120-180	TDS
CENTER MINE	NM	180-240	TDS
CHINO	NM	120-180	
CHURCH ROCK MINE	NM	>240	TDS
CONTINENTAL MILL NO 1	NM	120-180	TDS
GREAT REPUBLIC	NM	120-180	TDS
JACKPILE PAGUATE URANIUM PIT	NM	>240	TDS
KERR MCGEE SEC 17 MINE	NM	180-240	TDS
KERR MCGEE SEC 19 MINE	NM	180-240	TDS
KERR MCGEE SEC 24 MINE	NM	180-240	TDS
KERR MCGEE SEC 29	NM	180-240	TDS
KERR MCGEE SEC 30 MINE	NM	180-240	TDS
KERR MCGEE SEC 33 MINE	NM	180-240	TDS
KERR MCGEE SEC 35 MINE	NM	180-240	TDS
KERR-MCGEE CONCENTRATOR	NM	180-240	TDS
ORTIZ OPEN PIT GOLD MINE	NM	120-180	TDS
OLESTA MOLYBDENUM MINE	NM	120-180	TDS
SECTION 23 MINE	NM	180-240	TDS
ST CLOUD	NM	120-180	TDS
TYRONE	NM	180-240	TDS
WASHINGTON MINE	NM	120-180	TDS
ALLIGATOR RIDGE PROPERTY	NV	180-240	TDS
ATLANTA MINE & MILL	NV	180-240	
BELL MOUNTAIN	NV	180-240	TDS
BOREALIS MINE AND PLANT	NV	180-240	
BROKEN HILLS MINE	NV	180-240	
BULLION MONARCH MINE & MILL	NV	120-180	
CANDELARIA PARTNERS MINE AND PLANT	NV	120-180	
CARLIN GOLD MINING CO.	NV	180-240	

NAME	STATE	GROUNDWATER HARDNESS	GROUNDWATER QUALITY PROBLEMS
CARLIN PIT	NV	180-240	
COPPER CANYON MINE PLACER	NV	180-240	
CORTEZ GOLD MINES REFINERY/MILL	NV	180-240	
ENFIELD B. BELL MINE	NV	120-180	
EUREKA-HAMBURG MINE & MILL	NV	180-240	
FIRE CREEK MINE	NV	180-240	
GOLDSTRIKE	NV	120-180	
IRON MINE - ART WILSON COMPANY	NV	180-240	
MANHATTAN MILL	NV	180-240	
MCDERMITT MINE	NV	120-180	
NEVADA MOLY PROJECT	NV	180-240	
NEVADA PACKARD	NV	180-240	TDS
NEW SAVAGE MINE	NV	180-240	TDS
NORTHUMBERLAND	NV	180-240	
PINSON MINE & MILL	NV	180-240	
SIXTEEN-TO-ONE	NV	180-240	
SMOKY VALLEY MINE AND PLANT	NV	180-240	
STERLING MINE	NV	120-180	
TAYLOR MINE	NV	180-240	
TONOPAH DIVIDE	NV	180-240	
WELLS TUNGSTEN MINE	NV	120-180	
WINDFALL MINE AND MILL	NV	180-240	
BALMAT MINES	NY	<60	
MACINTYRE DEVELOPMENT	NY	<60	
PIERREPONT	NY	<60	
GREENBACK MINE	OR	<60	
NICKEL MOUNTAIN MINE	OR	<60	
CLIMAX MOLYBEDENUM--LANGLOTH, PA.	PA	>240	
GTE PRDTS CORP--TOWANDA PLANT	PA	120-180	
BLACK HILLS TIN COMPANY	SD	>240	
HOMESTAKE MINE YATES SHAFT	SD	120-180	TDS
ASARCO NEW MARKET MINE	TN	80-120	
BEAVER CREEK	TN	80-120	
COY	TN	80-120	
EUREKA MINE	TN	120-180	
GORDONSVILLE-ELMWOOD MINE	TN	>240	
IMMEL	TN	80-120	
YOUNG	TN	80-120	
HUDSON PIT & PLANT	TX	<60	
LONE STAR DEPOSITS	TX	<60	
LONE STAR IRON MINE & CONCENTRATOR	TX	<60	
PANNA MARIA MINE	TX	120-180	
SIDERITE MINE & MILL	TX	>240	TDS
BEAVER MINE (DEER CREEK)	UT	180-240	
BINGHAM OPEN PIT	UT	180-240	
BINGHAM PIT - LEAD + ZINC DEPOSIT	UT	180-240	
ESCALANTE	UT	180-240	
IRON BLOSSOM MINE	UT	180-240	
LISBON MINE-RIO ALGOM	UT	180-240	
MERCUR MINING DISTRICT	UT	180-240	
MIVIDA MINE	UT	180-240	
PANDORA MINE	UT	180-240	
RIM SHAFT	UT	180-240	
TOPAZ PROPERTIES OF BRUSH-WELLMAN	UT	180-240	
TRIXIE MINE	UT	>240	
VELVET SHAFT	UT	180-240	

NAME	STATE	GROUNDWATER HARDNESS	GROUNDWATER QUALITY PROBLEMS
VERNAL MINE	UT	180-240	SIGNIFICANT POLLUTION
VIPONT MINE	UT	120-180	TDS
LOWELL MINE	VT	<80	SIGNIFICANT POLLUTION
KNOBHILL MINES	WA	120-180	
MIDNITE MINE	WA	120-180	
SHERWOOD MINE	WA	120-180	
BEAR CREEK PROJECT	WY	>240	
BIG EAGLE MINE	WY	180-240	SIGNIFICANT POLLUTION
GAS HILLS OPERATION	WY	>240	
GAS HILLS PROJECT	WY	>240	
LUCKY MC MINE	WY	>240	
SHIRLEY BASIN MINE	WY	>240	